Engineering Library
DEC 1 4

News of the Industry Begins Page 982

AUTOMOTIVE INDUSTRIES

Volume 55
Number 24

PUBLISHED WEEKLY AT CHESTNUT AND 56TH STREETS
PHILADELPHIA, DECEMBER 9, 1926

35c a copy
$3.00 a year

Transmissions, differentials, pinion or worm drives, rear wheels, front wheels, steering pivots and fans are best wear-proofed by means of Timken Tapered Roller Bearings. Their taper design and *POSITIVELY ALIGNED ROLLS* are equally effective against the forces of shock, speed, thrust, torque and friction.

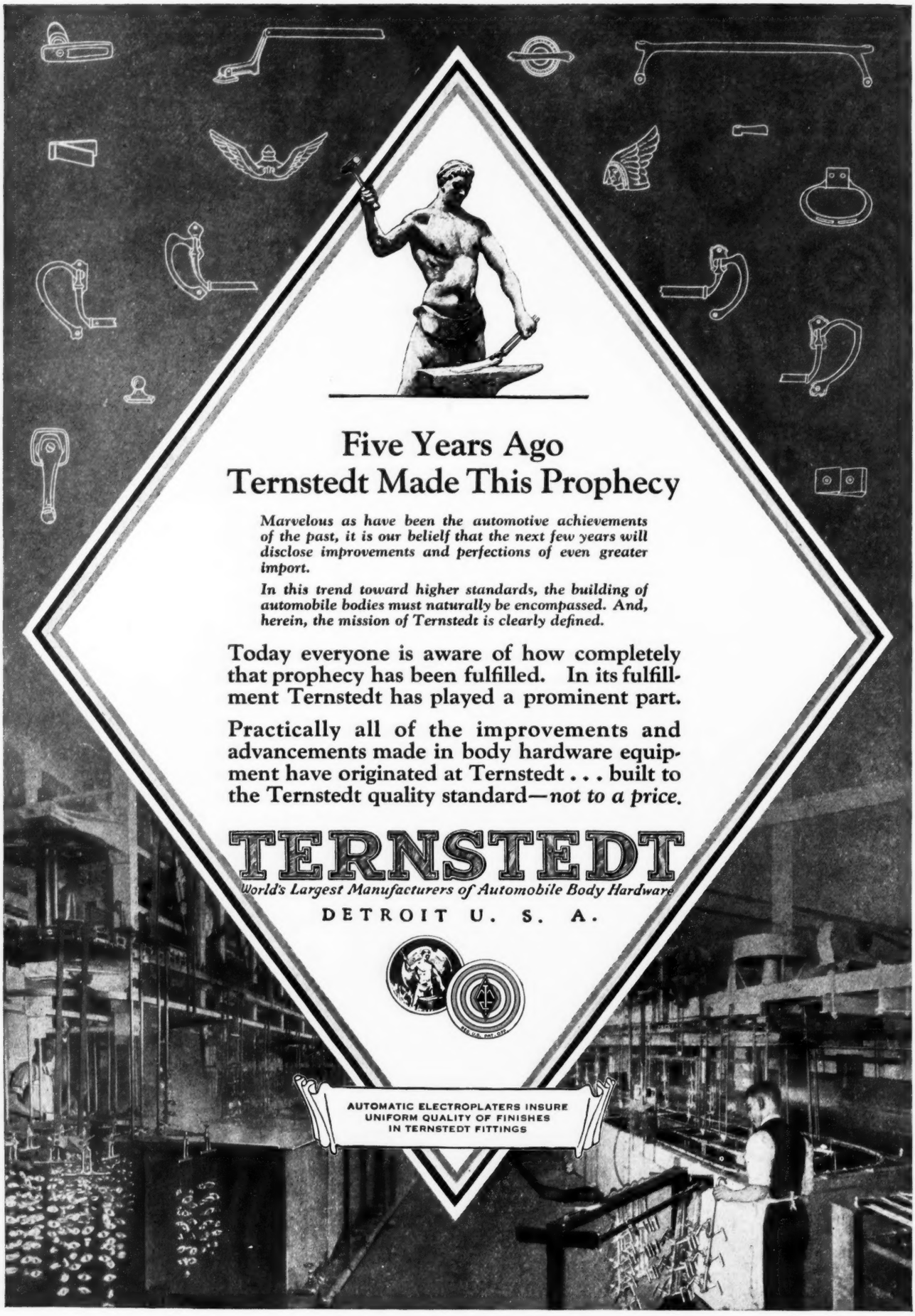
Since it is the bearings which must carry all these stresses, the quality of the bearing steel is an important criterion of a car's endurance. Timken steel, made only in Timken electric furnaces, adds to the endurance and economy of 91% of all makes of motor cars, buses and trucks in America.

THE TIMKEN ROLLER BEARING CO.
C A N T O N , O H I O

TIMKEN *Tapered Roller* BEARINGS

A STEEL WORKER POUNDS RECORDING MARKS INTO BLOOMS OF GLOWING STEEL AND A GREAT CRANE CONVEYS THEM TO THE TIMKEN COOLING PITS. TIMKEN ELECTRIC STEEL PRODUCTION IS THE LARGEST IN THE WORLD

Entered as second-class matter Oct. 1, 1925, at the post office at Philadelphia, Pa., under the Act of March 3, 1879


Five Years Ago
Ternstedt Made This Prophecy
Marvelous as have been the automotive achievements of the past, it is our belief that the next few years will disclose improvements and perfections of even greater import.
In this trend toward higher standards, the building of automobile bodies must naturally be encompassed. And, herein, the mission of Ternstedt is clearly defined.
Today everyone is aware of how completely that prophecy has been fulfilled. In its fulfillment Ternstedt has played a prominent part.
Practically all of the improvements and advancements made in body hardware equipment have originated at Ternstedt . . . built to the Ternstedt quality standard—not to a price.
TERNSTEDT
World's Largest Manufacturers of Automobile Body Hardware
DETROIT U. S. A.
AUTOMATIC ELECTROPLATERS INSURE
UNIFORM QUALITY OF FINISHES
IN TERNSTEDT FITTINGS

AUTOMOTIVE INDUSTRIES
VOLUME 55 *Philadelphia, Thursday, December 9, 1926* NUMBER 24

"Independents" Get 51% of Business This Year

Other 49 per cent of the dollar volume of cars produced is divided between Ford and General Motors. Sales figures show small companies are holding own.

By Norman G. Shidle

THESE are stove-league weeks for the automotive industry. A new production record has been set regardless of what happens between now and New Year's Day. Factory effort is more or less quiescent pending holiday feasts and the beginning of the New York show on Jan. 8. Production departments are taking inventories, sales departments are making up quotas for dealers to shoot at next year and advertising managers are buttoning up their lists for the 1927 battle of superlatives.

This is the time that hydra-headed commentators look backwards, forwards and sideways and then propound summaries, criticisms, suggestions and prognostications concerning that which has been, that which is and that which is about to be. Not yet having completed our annual "How's-the-outlook-for-the-New-Year" questionings, our mood as yet is more one of mellow reverie than of dynamic certainty. As the year draws to a close and we look back over what has happened we are struck again with the way in which the pendulum of automotive economic trends seems to come to rest at nearly the same place time after time, despite violent fluctuations up and down.

The strong trend toward consolidations in the industry in recent years, the unprecedented profits made by General Motors Corp. in 1926 and the constant coming and going of manufacturers, for instance, have led to unusual emphasis in the last year upon the idea that all of the business of the industry soon may be concentrated in a very few hands. Every year fewer car makers turn up to show their wares at the national shows. Every year fewer name plates and still fewer manufacturing companies appear to enter the annual struggle for new sales records.

As our meditative pencil rambles over the scratch pad, however, and as sales figures old and new run hither and thither across the sheet, interesting new aspects begin to appear from realignment of those old statistics.

Back in 1914, for example, it seems that the 10 cars with the largest production constituted about 84 per cent of the total output for the year. And this year, strangely enough, after a full dozen years of concentration talk, the 10 best sellers accounted for just about 88 per cent of the total sales made during the first nine months, according to figures compiled from registration lists. There has been some change in the names of the first 10 during that time, to be sure, but several names which were standard in 1914 bob up as bright and prominent as ever in the 1926 first 10.

GENERAL MOTORS and Ford, of course, are the two biggest single units in the industry. Yet these two huge organizations sold in the first nine months of this year only 49 per cent of the dollar volume of passenger cars produced by the American automobile industry.

That means that 51 per cent of the money paid for automobiles between January and October this year went into the coffers of manufacturers in no way associated with the two preponderant automobile organizations.

This figure is particularly significant in view of the unusually successful year which General Motors has had.

But more than mere name plates has to be considered today when talking about the 10 largest sellers, although in the 88 per cent figure quoted such combinations as Hudson-Essex, Overland-Willys-Knight and Oakland-Pontiac have been counted together. Nevertheless, the concentration of many makes under a single corporate ownership does mean a narrowing of the field from certain fundamental competitive angles at least.

THE fine, outstanding achievements of the big companies in the industry have and will properly continue to be the center points upon which the stability of the industry may rest, but in the process of giving full recognition to those achievements, the existence of a profitable niche for the progressive smaller organization is not to be lost to view.

Even from that standpoint, however, the trend toward concentration of business doesn't prove to be so great as commonly has been thought.

General Motors and Ford, of course, are the two biggest single units in the industry. Yet these two huge organizations sold in the first nine months of this year only 49 per cent of the dollar volume of passenger cars produced by the American automobile industry. That means that 51 per cent of the money paid for automobiles between January and October this year went into the coffers of independent manufacturers in no way associated with the two preponderant automobile organizations. This figure is particularly significant in view of the unusually successful year which General Motors has had.

From the standpoint of units produced, of course, the picture is only slightly different. General Motors and Ford have accounted for about 62 per cent of the total unit sales of the industry during the first nine months of 1926. Back in 1921, Ford alone built nearly that great a proportion of the total output for the year. This year the organization of the Dearborn manufacturer will market only about 35 per cent of the cars sold.

Jumping from the very large production companies to the other end of the scale, it appears that many of the smaller producers have been holding their own quite well so far as number of units sold is concerned. Take a list of ten smaller producers, for example, and compare their proportion of total output today with their proportion of five years ago and see how very close the two figures turn out to be. Ten companies which may be used for this purpose are Jordan, Stutz, Auburn, Pierce-Arrow, Gardner, Velie, Marmon, Moon, Chandler-Cleveland and Locomobile. All of these organizations were producing in 1921 and still are in the field.

In 1921 the combined output of these 10 companies was about 2.1 per cent of the total production of the industry. For the first nine months of this year, the combined sales of these same companies were about 2.0 per cent of the total for the industry.

So the trend toward concentration and consolidation hasn't vitally affected this group of smaller producers so far as percentage of total volume is concerned. True, these smaller producers have not been able to make inroads on the big organizations as a group, but in individual instances some have recorded quite marked gains from time to time.

The little fellow isn't always the one who is running behind; emphasis on that fact has appeared in these columns many times in the last 12 months. The sales figures for the first nine months of 1926 bear out our previous contentions.

Nine car manufacturers sold fewer cars at retail in the first three quarters of this year than in the similar period last year. Of these nine only three were in the "under 10,000" production class in 1925. Two of the group last year built far in excess of 100,000 vehicles, while the remaining four had 1925 records ranging 13,000 to 40,000.

The fine, outstanding achievements of the big companies in the industry have and will properly continue to be the center points upon which the stability of the industry may rest, but in the process of giving full recognition to those achievements, the existence of a profitable niche for the progressive smaller organization is not to be lost to view.

Next Week—

What Is Ford Doing in Aviation?

EVERYBODY knows that Henry Ford, with the hearty support of his son Edsel, has been devoting considerable attention to aviation. For two years he has been gradually extending his interests in this new industry. Items concerning this or that phase of his aeronautic activities have appeared frequently in print. But what is the sum total of these activities? What is the scope of the organization that he has built around his experiments in air transport? What does he hope ultimately to accomplish? These are the questions answered in a particularly timely article which will appear in next week's issue.

Factories Urged to Think of Repair Costs When Designing New Cars

Maintenance is becoming dominating factor in automobile industry. Simplified design will help to solve skilled mechanic problem. Better repair shop machinery is needed.

THAT the motor car industry is approaching, in fact is on the threshold, of a stage of development in which the factor of maintenance is to be a dominating one, was the opinion expressed by David Beecroft, vice-president of the Chilton Class Journal Co., at the meeting of the Cleveland Section, Society of Automotive Engineers, Nov. 29.

The acute shortage of skilled mechanics in the automotive repair shops of the country is a contributing factor that is ushering in this maintenance stage. While motor vehicle registrations have more than doubled in the last six years, the supply of skilled mechanics has lagged behind.

There is today an urgent demand for changes in motor vehicle design and improvements in repair shop machinery that will permit unskilled labor to be used to a much greater extent in the 83,000 repair shops of the country than is possible now. The evolving of manufacturing methods, so as to use unskilled labor in factories, has made mass-production and low prices possible, but while this progress has been under way in the manufacturing plants, parallel progress has not been under way in the repair end.

Better Tools and Flat Rates

Two factors have been working for general improvement in the repair field, namely, the expansion of the flat rate system and better repair shop tools and equipment. The demand today is for improved shop machinery that will make it possible to use unskilled help to a much greater extent than at present. In the past year several manufacturers have developed repair shop machines that are practically fool-proof in the hands of unskilled labor, but a beginning has only been made.

There is an urgent demand from the repair shops of the country for improvements in motor cars that will aid in dissipating the present repair shop complex. Greater accessibility that will permit of quicker removal and replacement of parts is one field that the engineer has been asked to give attention to. He should keep in mind that it is one thing to design a part with the machine shop or the assembly line in mind, and another to design that part with the 83,000 repair shops of the country in mind.

The working out of satisfactory flat rate systems for repair work has contributed assistance, but it has not solved the mechanic problem. Mechanics are leaving the motor industry and going into other repair fields where higher remuneration is possible.

There is no question but that the next few years will witness a good measure of improvement in design along this line. One specific advantage of this will be the lower cost of putting used cars in a marketable condition. Accomplishing this is equivalent to reducing sales resistance on used cars.

Since 1913 the wage scale for all workers has been gradually rising. Here are a few conspicuous steps:

1913	100
1920	199
1925	238

There is no indication that wages have reached the top, and the 1926 figures may show an increase over the 1925.

When these figures of wage increase are contrasted with figures showing reduction in wholesale prices, the question of using unskilled labor and improving accessibility, and installing better repair shop machinery and methods becomes doubly apparent. Here are the average wholesale prices:

1913	100
1920	226
1925	160
1926	150

In the sale of automotive replacement parts, the reduction in prices has been approximately the same as these figures. There is intense competition at present in the sale of replacement parts between the car manufacturers and the independent parts makers, which is certain to result in lowering service costs, but this maintenance cost can only be brought to its most economic status when it is given primary consideration by the engineer in the vehicle design. Some manufacturers have already established service engineering departments to care for this work.

German Design Greatly Modernized During Past Year

Close attention given to detail improvements. General trend is toward greater comfort, reliability and silence. 14 of 17 new models are sixes. Four-cylinder engines are disappearing.

By Edwin P. A. Heinze

THERE have been rapid changes in automobile design in Germany during the past year. At the present time the most popular low-priced cars have engines of slightly over 1 liter (61 cu. in.) piston displacement, with a compression ratio of 4.8 to 1 and turning over at 2200-2500 r.p.m. The next class of popular-priced cars have displacements of about 1.5 liters (91.5 cu. in.), with a compression ratio of 5.25 to 1 and running at 2400-2800 r.p.m.

Out of a total of 64 models of passenger cars now on the German market, 28 have engines of 2 liters displacement or less; 22 have displacements of between 2 and 3 liters, four between 3 and 4 liters and a few above 4 and up to 7 liters, but these last two classes are essentially luxury cars. An engine size particularly favored by German designers for medium-sized cars is 2½ liters (152½ cu. in.), no less than 10 models with this displacement having been included among those exhibited at the recent Berlin show.

Development in German passenger car design in general has paralleled that in France and England. The four-cylinder engine has been practically discarded, except for low-priced cars, the lack of elasticity of the small, high-speed, four-cylinder engine having long been recognized as a drawback. Of 17 new models, 14 are "sixes," one is an "eight" and only the remaining two are of the four-cylinder type.

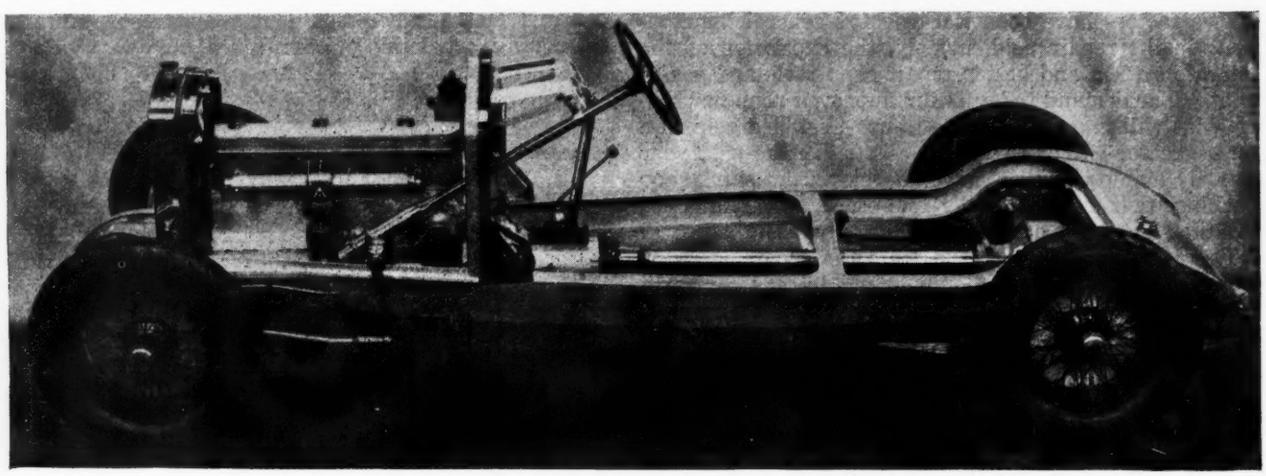
There are only two makers in Germany producing eight-cylinder engines. Both are straight-eights and one of them (Hansa-Lloyd) made its appearance last year, since when it has been improved in details. It has a displacement of 282 cu. in. The new eight-cylinder engine has 191 cu. in. displacement and its maker (Horch) plans to turn out large series, with the object of cutting down the cost of production to such an extent as to enable him to compete with inferior cars. It is worthy of note that neither Daimler-Benz, Maybach, Audi, nor any of the other leaders of the industry have gone in for the "eight."

Seven-Bearing Crankshafts

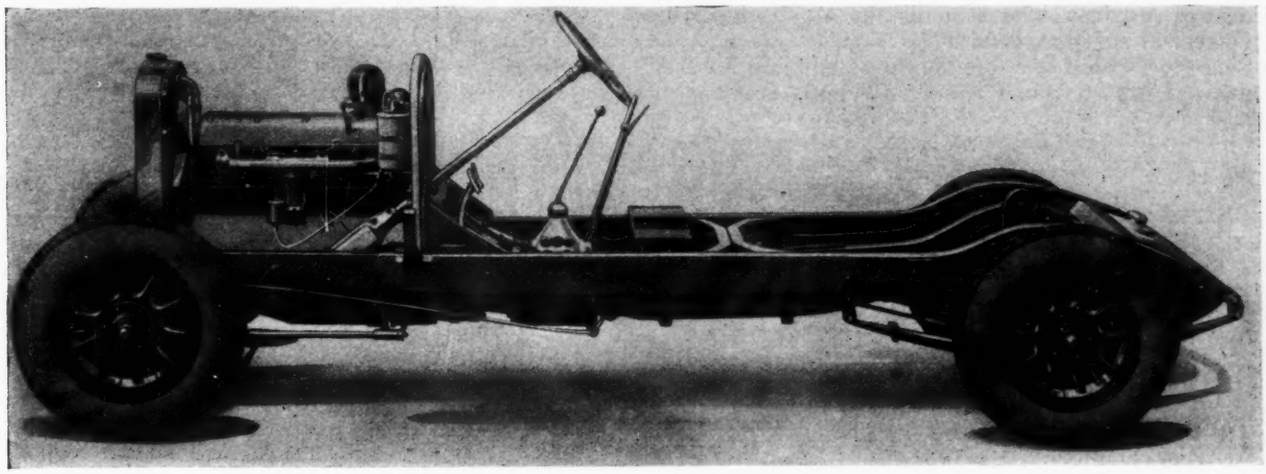
Great attention has been given to detail improvements. No less than eight of the new six-cylinder engines have crankshafts running in seven bearings, and all the latest improvements, such as air and oil filters, battery ignition (frequently together with a magneto), generator and starter blocked to engine, etc., have been embodied in all models.

The general trend is toward greater comfort, reliability, silence and smooth running, for which reason some makers have gone back to the L-head type of cylinder.

The single-disk dry clutch is rapidly gaining ground and attempts are being made to simplify gear boxes, those with three speeds being preferred. In 10 cars out of the 17 new ones, the torque is taken up by the rear springs. The transmission shaft is generally in-



Hansa-Lloyd eight-cylinder passenger car chassis



Horch eight-cylinder-in-line chassis

closed and provided with two universal joints, mostly of the fabric kind. The gear ratio in the rear axle is generally 5 or 5.5 to 1, and in two extreme cases it is 6 to 1, the intention being, of course, to eliminate gear changing as far as possible. Four-wheel brakes are fitted on all but the very cheapest of small cars, as are also balloon tires. Chassis lubrication has been greatly improved, many cars having a central system.

In passing, mention should be made of two front-driven cars exhibited at the Berlin show. One was by Rumpler, who has given up his famous "raindrop" shaped car with the engine at the rear. Another neat design is that of Voran, built by a new maker. Its engine, the same as that of the Rumpler, forms a single block together with change speed and differential gear, axle and steering parts. A feature is the ease with which this unit can be taken out of the frame. This car is to be sold at a popular price.

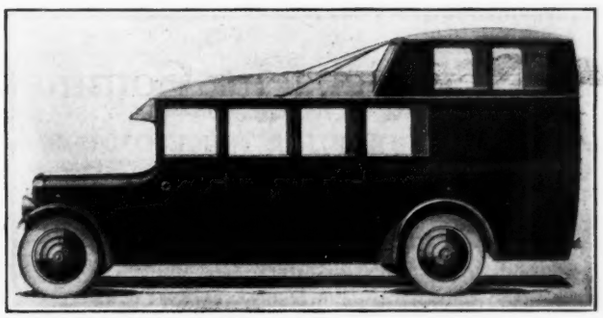
Superchargers are not met with as standard equipment, except on the higher-priced Mercedes-Benz cars.

Development of motor freight traffic in Germany has not progressed far due to unfavorable economic

Interior of Daimler-Benz bus with a body similar to that of the Hansa-Lloyd

conditions. Increase in the number of motor trucks, delivery wagons, etc., has been very slow, especially in the heavier classes. But as regards design, German makers are well abreast of the times, and there were some very fine specimens of high class chassis at the show. As a rule German trucks are fitted with four-cylinder engines, but eight of the commercial vehicle chassis shown had six-cylinder engines, these being intended mainly for omnibus work. Crankcases are of aluminum alloy exclusively, and the upper part is cast in one piece with the cylinder block only in the Daag, to which reference will be made further on. This applies equally to passenger car engines, the sole exception in that case being the Hansa-Lloyd eight.

The N.A.G. company had a 15-ton six-wheeler (tractor and semi-trailer combination) on view, which was much commented on. Some interesting chassis with gasoline-electric drive appear to have a chance in Germany. All the leading German commercial



Hansa-Lloyd bus with rear seats elevated

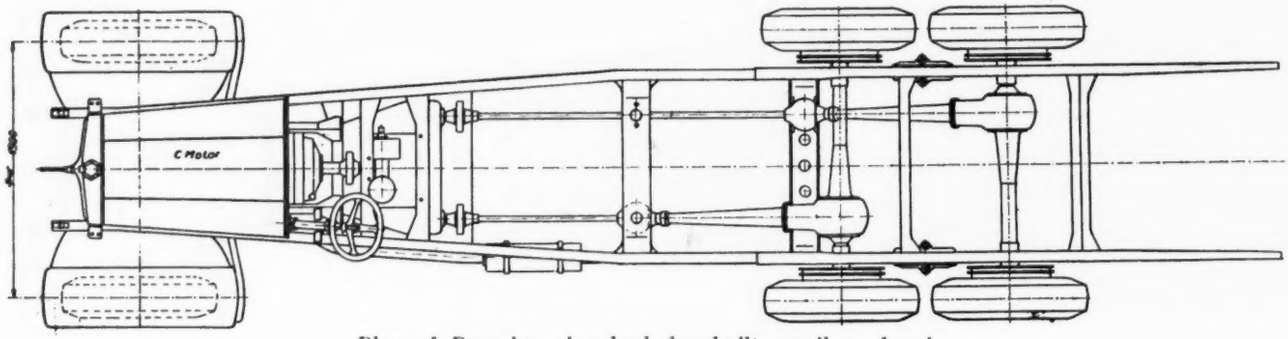
vehicle manufacturers, including Buessing, Magirus, N.A.G., Daag, Durkopp, Krupp, Hansa-Lloyd and Vomag, have new and greatly improved models for 1927. But there are no really cheap trucks for heavy work with the exception of Vomag, which has been standardized so that a large number of parts can be used on various models. The manufacturer claims he sells at prices 40 per cent lower than equivalent American trucks can be sold for. As a rule, however, the small turnover is keeping prices up.

Much attention is being paid to the special requirements of bus services, for which more powerful engines are coming into vogue than have been used hitherto. There is, for instance, a very fine job by Buessing consisting of a low-built, six-wheel chassis with a body for 70 passengers. Another very high-class chassis is being produced by Daag. It has a four-cylinder engine with a cylinder block and upper half of crankcase cast in one piece of silumin and provided with steel liners. Mention must also be

made of Magirus, who is using the Maybach engine in a special bus chassis with the transmission mounted to one side. Side wheelers appear to have slightly lost in favor. Apart from Buessing, Krupp is producing a small, fast, six-wheeled 2-ton truck with a unique transmission, the power being taken through an auxiliary gear between the two rear axles, to which latter it is transmitted by two short shafts.

A great variety of dump trucks are being produced in Germany, most of them being arranged for tipping in three ways. In one instance the hydraulic hoisting mechanism is electrically driven, and electro-magnetic brakes are also provided in this design, for both tractor and trailer. An ingenious new mechanical dumping gear has just been brought out in Germany, which, aside from dispensing with the plungers and pump of the hydraulic hoist, which are liable to leakage, has the advantage of saving head room.

Quite a number of German makers have taken to building tractors, and these are seen much about the streets of the large cities. There are two kinds, viz., the very slow ones, related to the farm tractor, the operators of which require no license, and the faster type related to the motor truck, an example of the latter class being the new N.A.G. already mentioned, which does up to 18 m.p.h. but requires registration and driving license.



Plan of Buessing six-wheel, low-built omnibus chassis

For light service, good and cheap delivery cars are plentiful in Germany. Brennabor and Opel, who produce their chassis in large series, sell at particularly low prices. But there are numerous other works supplying good cars of this class at very reasonable terms. Much of the work which in America is done by this type of delivery wagon is done in Germany with motor tricycles and sidecar outfits which are in great favor for the delivery of loads up to 500 lb.

New Schacht Commercial Chassis is Introduced

G. A. SCHACHT MOTOR TRUCK CO., Cincinnati, has placed on the market a new chassis, Model N for use in motor coach and high-speed, long-distance freight work. An 80 hp., six-cylinder Buda, Model BA-6 engine is employed which, in connection with the overdrive gearing provided through the Schacht 10-speed transmission, under favorable conditions permits speeds up to 50 m.p.h.

The details of the engine are fairly well known and include such items as three-point suspension, aluminum crankcase, full force-feed lubrication, and pump circulation. The clutch is Brown-Lipe 13-plate dry disk. The Schacht transmission, which provides two ranges of speed, forms a unit with the engine and operates in conjunction with a four-speed transmission mounted amidships, so that eight forward speeds and two reverse are provided. An overdrive of 40 per cent is possible.

The rear axle is a double reduction Wisconsin of the full floating type with a 7.33 to 1 ratio. The total reduction on low gear is 46 to 1. Service brakes on rear wheels are fitted with a B-K booster and operate on 20 in. drums with 5 in. faces. The emergency brake is located on the driveshaft. Rear springs are 60 by 3½ in.; front springs, 42 by 3 in.

The front axle is of I section, 2¼ by 3¼ in. A Ross cam and lever steering gear is employed. Frame side members are of pressed steel 8⅝ in. deep at the center and tapering toward the front and rear. The chief dimensions are as follows: Tread, 69 in. front and 68½ in. rear; wheelbases, 205 in. and 217 in.; turning radius, 33 ft.; frame height, 28 in. front and 30 in. rear; overall width of chassis, 84 in.; ground clearance, 9½ in. The chassis weighs 7800 lb.

Budd disk wheels are standard, and are equipped with 36 by 6 in. pneumatic tires front and rear; 38 by 7 in. pneumatics can be furnished at extra cost. Other equipment includes Firestone rims, Zenith carburetor, vacuum fuel feed, Leece-Neville starter and generator, 12-volt, 175-amp. hr. battery, E&J or Guide headlamps, Alemite chassis lubrication, extra wheels, Bosch electric horn, and front bumper.

ACCORDING to a recent bulletin from the Department of Agriculture, expenditures of state highway departments during the year 1925 for road and bridge construction on the State highway systems totaled $649,125,101. Of this amount 59.6 per cent or about $386,864,000 was spent for new construction; 18.4 per cent or about $119,434,000 for maintenance, and the remainder for materials and equipment, interest and principal payments, administration costs, etc.

To meet these expenses the states had left over from the previous year $115,658,721 and received from various sources during the year 1925, $664,424,571. It is interesting to note that of the latter sum, raised during 1925, 43.5 per cent or about $289,057,000 was raised by direct taxation upon motor vehicles through license fees and gasoline taxes.

Why Factory Executives Should Boost Service Equipment Exhibits *at the* Shows

By A. V. Comings
Editor, Automobile Trade Journal

AUTOMOBILE factory executives who are lying awake nights trying to think of new ways to increase future car sales will do well to consider the sales significance of the large, segregated exhibits of automobile service shop equipment which will be part of the New York and Chicago shows this year, and of many of the big city sectional shows from coast to coast.

Service shop equipment has been exhibited in the automobile shows before, but it was scattered through the accessory booths in such a way that interested service executives and mechanics had to make a round of the entire show if they were to see all of it. And the machines and tools were not in operation.

At this year's shows, the service shop equipment and tools will be gathered together in one big, compact exhibit, and every piece of equipment and every tool will be actively demonstrated by mechanics, who will show what may be accomplished by each particular device.

In addition to the New York and Chicago shows, there will be similar segregated, working exhibits of shop equipment in the sectional shows at Baltimore, Philadelphia, Cleveland, Cincinnati, Detroit, Milwaukee and St. Louis. And if present plans mature, as there is every indication they will, similar exhibits will be staged in the shows at Boston, Kansas City, Montreal, Denver, Los Angeles and San Francisco.

All of the exhibits outside of the national shows will be staged by local automotive equipment jobbers, cooperating in this effort for the good of the industry as a whole.

A tremendous promotional campaign will be carried on in the trade for several weeks preceding each show, in order that the entire trade may be informed of what the shop equipment exhibits offer. This promotional campaign centers around two huge direct-mail broadsides covering the trade in each show territory, which will go to every car and truck dealer, every garage and independent service station and every truck and motor bus fleet operator.

The national shows will campaign in a similar manner in the New York and Chicago territory.

The thousands of salesmen representing the jobbers who will put on these exhibits in the sectional shows will "sell" the idea to the trade for weeks before each show, in their trips out into the territory, and other means will be used to interest every service man in the field in attending these shows and seeing for himself the tools and equipment that have been devised for his use in better motor car and truck service.

That these exhibits have been properly timed is shown by the tremendous interest developed in better service through flat rate and piecework during the past year. Over 20,000 flat rate schedule books on all makes of motor cars have been sold in the United States during 1926, evidencing a far greater interest in this method of charging for car repairs than ever before.

The flat rate shop must be well equipped to do the necessary maintenance work that comes to it, and that there will be an outpouring of the trade to these exhibits such as the shows have never seen before seems assured.

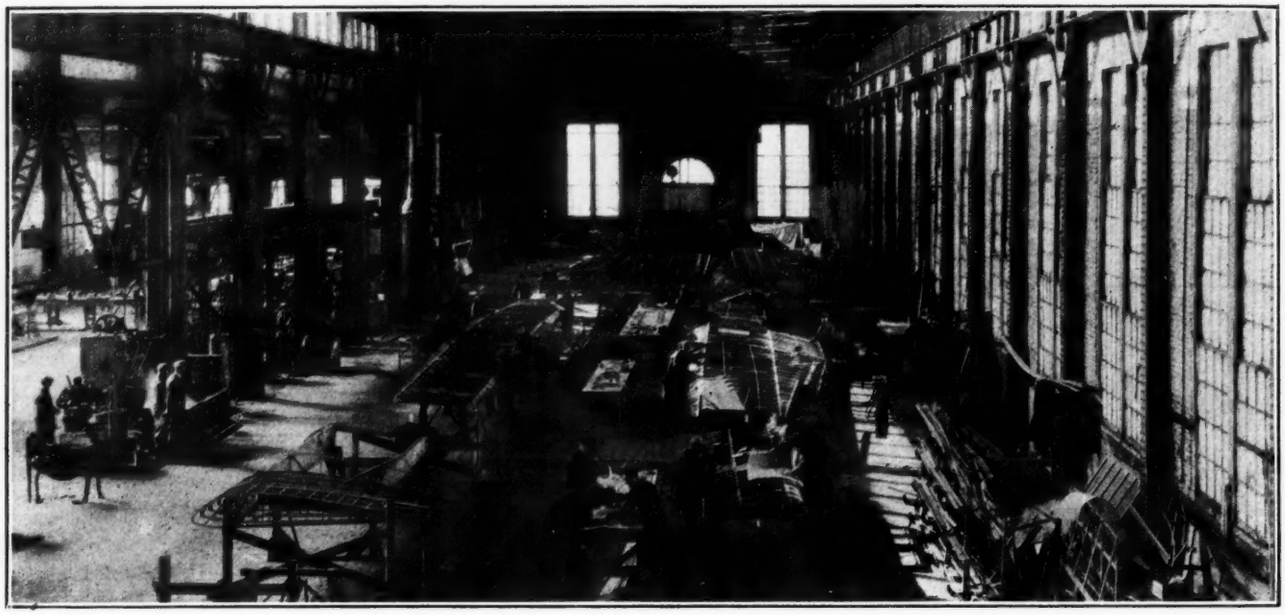
It is pretty well agreed that the car or truck dealer who has a good, well-equipped service shop, where customers' motor vehicles are maintained expertly and economically, builds constantly for greater future popularity of the product he sells.

Hence it would seem the part of wisdom for factory executives concerned with sales and service to urge their distributors and dealers to attend these shop equipment exhibits in their respective territories, that they may make their service shops modern and efficient through the knowledge they can gain at these shows. This is an opportunity never before offered to such a huge part of the service end of the trade, and the factories can ill afford to let this opportunity pass to urge their distributors and dealers to gain the information offered.

In many of these shows the jobbers exhibiting are perfectly willing to schedule, at regular hours, special shop clinics for any group of car dealers who may be interested, and the wise factory executive will promote the interest of his dealers in a clinic of this kind.

It is the opinion of many in the industry and the trade that automobile service and maintenance is on the threshold of a tremendous development, and in this development these exhibits are a big step in the right direction.

And the whole-hearted cooperation of those factory executives who are striving to promote greater future sales of their products will help materially in speeding up this progressive movement.



A portion of the Huff-Daland airplane plant at Bristol, Pa., showing the wing assembly department in the center and part of the machine shop at the left

Airplane Production Moving Slowly Toward Quantity Basis

Modified progressive assembly line system now used in steel tubing fuselage construction. Development of machine methods will reduce costs materially. Hard tubing difficult to work.

By Athel F. Denham

WITH the increasing use of steel tubing in airplane fuselage construction, the methods employed in building up fuselages of this material in regular production take on considerable interest. As this type of construction is of relatively recent origin and as, moreover, airplane production has not yet reached the quantity stage, there has been no intensive development of machine methods for this work so far.

Huff-Daland Airplanes, Inc., Bristol, Pa., which has one of the largest factories for the manufacture of airplanes in this country, employs the steel type of fuselage on practically all machines turned out. The material used is chrome-molybdenum tubing, possessing several characteristics which render it particularly suitable for this purpose. When properly heat treated this alloy steel has almost twice the strength of carbon steel tubing.

With carbon steel tubing, points of weakness developed near the welds, but with chrome-molybdenum steel tubing this trouble has not been experienced. In fact, it is claimed that, owing to the peculiar characteristics of the alloy steel, the tubing actually increases in strength at points near the weld, due to the welding operation.

The adoption of this metal, however, has led to several constructional difficulties. Owing to its hard-

THIS article discusses present conditions of airplane fuselage construction and compares them to conditions which governed the production of automobile frames 25 years ago. At that time automobile frames also were made of steel tubing and machine methods had not been developed to any great extent, the scale of production, as in the case of airplanes today, not being sufficiently large to warrant such development.

The relation between costs of labor and materials in frame construction 25 years ago was about the same as it is in fuselage production at the present time.

It is to be expected that increased production of aircraft will bring with it the development of specialized machinery and methods of production, and that this will lower manufacturing costs in about the same proportion as it has in the automobile field.

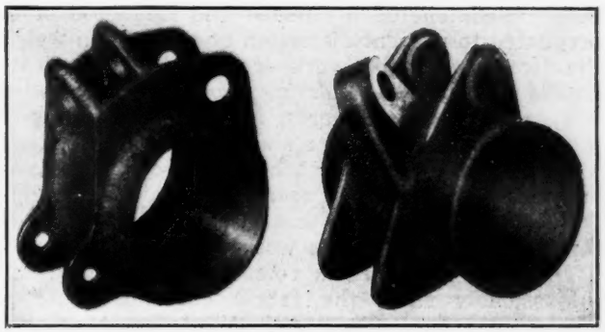
ness, the consumption of hacksaw blades in cutting off lengths of tubing is very high. At the present time only about six cuts can be made with one blade, and the consumption of blades by Huff-Daland alone during the past six months was in the neighborhood of 25 gross. It is possible that grinding apparatus may be designed to shape the ends properly, the heat involved in grinding not having a deleterious effect on the strength of the metal. Such apparatus would have the additional advantage of making a considerable cut in the labor cost. For straight cuts 3/32 in. carborundum wheels are already being used.

Tubes Cut at the Mill

Chrome-molybdenum tubing is now bought directly from the mill and has to be ordered several months in advance. To reduce wastage these lengths are not purchased in mill sizes but are cut to approximate size at the mill, an additional charge being made for cutting off. Naturally, this increases the cost of the tubes. Moreover, at the present time, if it is desired to make changes in design it is often necessary to wait several months before tubing of the desired lengths can be obtained. As it is not always possible to do this, there is sometimes considerable wastage, due to the necessity of using longer tubes, which have to be cut off. Another item tending to keep the cost of airplane construction high is the expense of training welders. Owing to the extreme care necessary in airplane work, most of the welders who enter this field must go through a considerable period of training before they are capable of actual constructional work.

On the whole, the steel-tube type of fuselage can be made much cheaper if the production is on a larger scale. At present Huff-Daland employs about 25 men per ship per month, but it is estimated that when the plant is up to its maximum capacity and when improvements in methods of manufacture on a quantity basis have been put into effect, this will be cut to four men per ship per month. At present approximately 20 per cent of the cost of construction of a fuselage is for materials and 80 per cent for labor.

Aside from the possible reduction in the cost of the tubes, other items of cost which now represent a considerable factor can also be reduced. Methods of manufacturing fittings are already undergoing changes. Formerly nearly all fittings were made by cutting templates and shaping the fittings to these by means of a nibbler, the bending being done largely



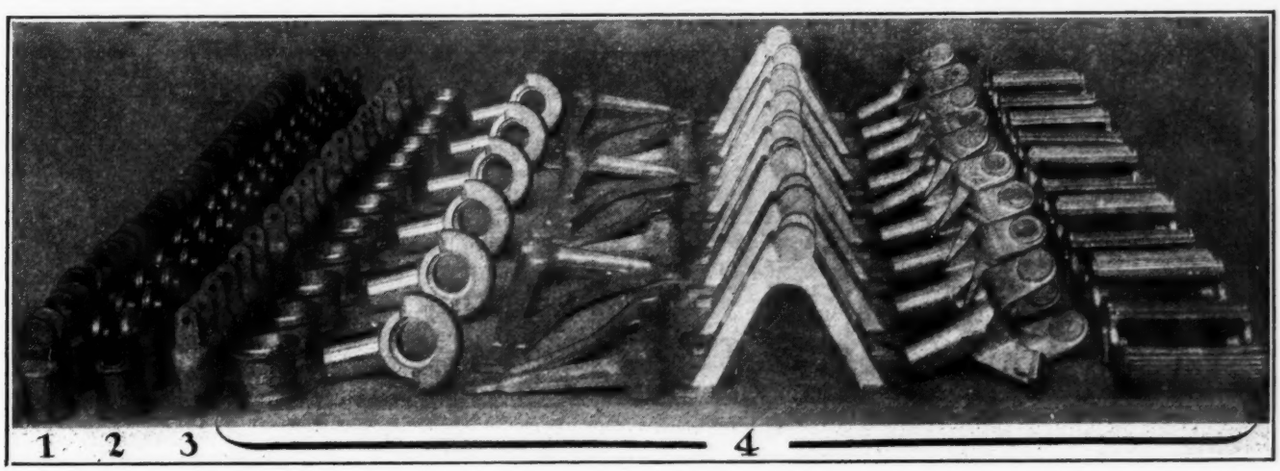
The larger metal fittings in airplane fuselages which were formerly built up by hand from sheet metal, as shown at the left, and now being replaced by electric steel castings or drop forgings (right)

by hand. As most of these fittings are of aluminum alloy or sheet metal, they can easily be stamped out with dies. While Huff-Daland is now using dies for some of these fittings, the lack of standardization due to the preponderance of constantly changing Government orders over commercial requirements reduces considerably the availability of the die and stamping method of forming fittings. Quantity production, however, will no doubt make it imperative that such a method be used. Some of the larger fittings, which formerly were made up of pieces of sheet metal welded together, are now being replaced by castings of electro-steel and steel drop forgings, which also reduces the labor cost. With such castings and forgings about the same strength is obtained as with sheet metal fittings of equal weight.

Metal parts used in the wings of Huff-Daland planes in some cases consist chiefly of duralumin tubes and fittings riveted together. At present these are riveted by hand. Efforts are being made to cut down the work required on this operation. The most likely method at present appears to be a rivet press which may be of the hand-operated type.

Wings of "Airplane" Spruce

Aside from these metal parts, Huff-Daland wings are composed mainly of "airplane" spruce. This wood is purchased rough-dried. It is stored in special sheds for drying and is kiln-dried later and worked in rooms in which the humidity of the air is kept constant. From the time that any lot is declared ready for wood working it is thus kept at a definite



Smaller fittings are now being made in three forms. 1 and 2 are typical examples of steel drop forgings; 3 shows similar parts under less stress which are press formed, and 4 is a group of light alloy parts which are cast

moisture-content until finished and lacquered or impregnated to prevent distortion or changes in weight. Practically all wood work of the more complicated kind is still done by hand. Plywood, used in the wings and certain fuselage parts, is bought directly from the manufacturers, cut to size. Manufacture of plywood at the Bristol plant has been considered, but production needs of the near future will not be sufficient to warrant the installation of presses and equipment to handle this work.

The wing structure is completely assembled in a sub-assembly shop, the fabric covering being attached in a separate room. While most of these coverings are still being sewed on by hand, this laborious process is gradually being replaced. The envelope type covering is coming into use, in which the covering is sewed to shape completely and merely slipped over the wing frame. This work also is done in constant temperature and moisture content rooms, as is the doping of wings. Any increase in moisture content of the doping room is quickly apparent, as the dope turns white. In the doping room it is also necessary to have an exhaust system to carry off the fumes. The present method at Huff-Daland is to have a moisture and temperature controlled air inlet at one side near the ceiling and an exhaust fan in the outside wall near the floor, the opening to which can be controlled by a sliding door. Painting of all surfaces is done by the spray process, pyroxylin lacquers being used.

Finished wings are mounted in racks along the assembly line. The first assembly stage consists of the mounting of the fuselage and powerplant installation. The second consists of mounting the wings, attaching tail surfaces, etc. After this stage the engine is ground-tested in the plane outside the building, whence the plane is returned to the shop for inspection. With an increase in production the various assembly stages will be further subdivided no doubt, and will finally form a completely progressive assembly line.

Quite a study has been made of the problem of delivering materials to the Huff-Daland plant, and of finished ships to consignees. The plant is located adjacent to the Delaware river. There is a one-way field between the river and the plant, which is being leveled off and put into shape for use as a flying field, avoiding a disassembly for shipping by rail. A runway to the river for seaplanes is also being provided. For the more convenient delivery of materials, a railway spur already in existence is being led through a sliding door, right into the plant.

Conditions of fuselage construction are similar in some respects to those which governed the production of frames for automobiles 25 years ago. At that time automobile frames also were made of steel tubing, and machinery for this purpose had not been developed to any extent, the scale of production not being sufficiently large to warrant such development. The relation between the costs of labor and materials was about the same as it is in fuselage production at the present time.

Gear Tooth Spacing Tester

A DEVICE by which the accuracy of tooth spacing of gears of any type can be checked has been marketed by the Gleason Works of Rochester, N. Y. The instrument comprises an "optimeter," an optical device provided with a scale having divisions of 0.00005 in. Under the magnifying glass the scale marks appear to be about 1/16 in. apart, hence readings can be estimated to a fineness of even less than 0.00005 in. In the photographic view herewith two of the testers are shown mounted on a floor stand. The top of this floor stand is a surface plate provided with T slots which permit of the testers being bolted down securely.

Referring to the sectioned drawing, the tester has a hinged arm with a slotted extension to which the testing unit may be clamped in various positions to suit the convenience of the user. The testing unit consists of a tube, which has the "optimeter"

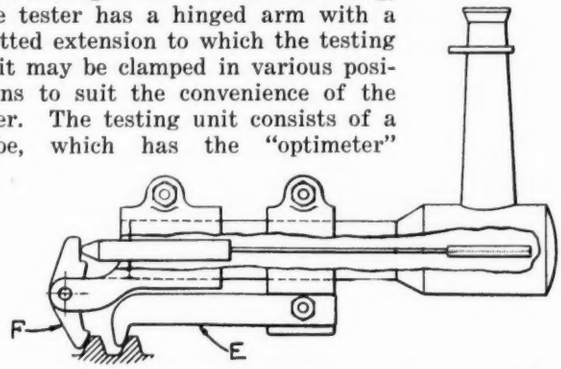
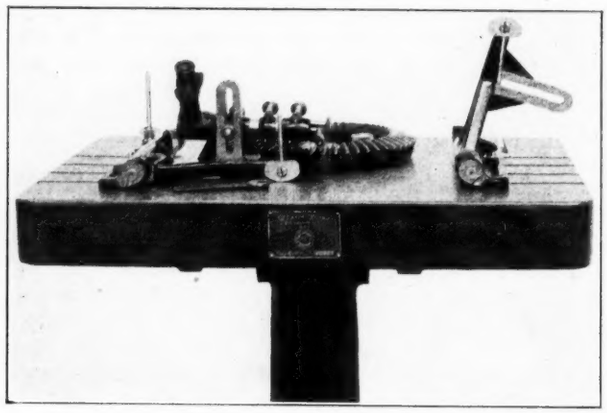


Diagram showing mechanism of Gleason tooth spacing tester

mounted on it at one end, and two holders on the opposite end. One of these holders, *E*, carries a stationary finger, while the other carries a movable finger *F*.

The stationary finger acts as a stop which is brought against one side of a gear tooth, while the movable finger is pressed against the corresponding side of an adjacent tooth. Finger *F* is really a double-armed lever, and its other arm rests against a rod extending through the tube of the instrument and contacting at its other end with the "optimeter." Any movement



Gleason tooth spacing tester

imparted to finger *F* relative to finger *E* is transmitted to the "optimeter."

When using the device in inspection work, finger *E* is first placed in contact with the side of one tooth, and by turning a knob the holder is adjusted to bring finger *F* in contact with the adjacent tooth. The reading of the "optimeter" for this setting is then noted. Similar readings are taken on adjacent teeth all around the gear, deviations from the reading first obtained being noted down. Before passing from one tooth space to the next, the tester fingers are raised out of contact with the teeth by moving a handle on the tester to a horizontal position, so as to allow of the operator indexing the gear through an angle corresponding to one tooth. The fingers are then dropped into the testing position by a reverse movement of the handle. The capacity of the instrument extends up to gears of about 1-in. circular pitch.

A.E.A. Goes

Marketing for a Market

Will spend $750,000 in cooperative sales promotion work during next three years. What can the expenditure be expected to accomplish?

By Leon F. Banigan
Editor, Motor World Wholesale

THE Automotive Equipment Association is going to spend a quarter of a million dollars a year for the next three years in market development work.

Equipment selling has become so integral a part of the business of the average successful automobile dealer that a progressive movement of this magnitude on the part of equipment manufacturers and jobbers becomes a matter of high importance to car manufacturers.

In this brief, illuminating article, Leon F. Banigan, editor *Motor World Wholesale*, sketches the possible significance of this big A. E. A. campaign, pointing to several ways in which it impinges on the interests of the car builders. Mr. Banigan probably is in a better position than any other man in the industry to see the future possibilities of this market development movement as applied to the parts and accessory field. His comments are interesting.

MOST of the ills of business today—and this of course includes the automobile business—are the result of lack of knowledge concerning markets and the consequent lack of the type of merchandising needed to reach those markets.

Over-production, over-selling and lack of selling, substitution, price-cutting, returned goods, freight bill squabbles, gypping, and most other ills which we are seeking to segregate and treat individually are natural by-products of lack of scientific control of business, based upon or at least influenced by knowledge of existing facts.

A car distributor in an eastern city a few summers ago built a sales and service building at a cost of $250,000 when he signed up to handle a new car. The factory producing that car was not in a position to build $500,000 worth of cars in three years. The gross profit on the greatest number of cars that that distributor could hope to obtain from that factory in a year would not have paid a reasonable rental on one floor of his palatial building. As a matter of fact the factory went out of business before it had produced $250,000 worth of automobiles.

More than $50,000 was invested, it is said, in designing and attempting to market a bumper that virtually would pick up a pedestrian, brush him off and put his hat back on his head. Yet a few simple facts which could have been obtained through asking three or four intelligent questions of any car owner or dealer would have proved conclusively to the men behind that bumper that there was no market for a commodity of that kind. Lack of facts is producing many other merchandising errors in our industry today.

The $750,000 which has recently been appropriated by the Automotive Equipment Association, to be spent at the rate of $250,000 a year for three years for market development work, will be well invested if it produces a few facts and a few ideas which help to prevent merchandising wastes.

If the market development plan does nothing more than accentuate the necessity for singleness of purpose in the industry; if it does nothing more than bring together in thought, if not fraternally, the factors pursuing divergent marketing activities, it will have accomplished a monumental task.

Suppose the car manufacturers, dealers and distributors were brought to a full realization of the wide service that the established wholesale channels are performing for the entire industry today—that would be cheap if it could be obtained at the cost of $250,000 a year.

It can reveal markets as they actually exist and point out merchandising wastes that are today sapping the vitality in our distributive channels.

For instance, is it any wonder that there are too many jobbers and too many retailers and too many manufacturers—or that we think there are—when nobody knows and few seem actually to care how much automotive merchandise our markets can profitably absorb?

Think of the value of information gathered by 10,000 jobber salesmen and compiled by a central bureau on who their retail customers are buying from, what they are buying, how much and why.

That information alone would be cheap to manufacturers' sales departments and jobbers at $250,000 a year.

Consider what happened in Chicago last month. Two associations and two trade exhibits, both of them wonderful expositions of two groups of manufacturers and jobbers that have much in common—and both of them suffering because of what one lacks and the other has. A. E. A. jobbers found few representative lines of replacement parts in their show, yet the maintenance market from which the A. E. A. jobber must earn his bread and butter largely in the future numbers replacement parts among its important commodities.

The National Standard Parts Association jobbers found a noticeable absence of shop equipment and tools in their show. Yet in the maintenance market, which is also the bread and butter of the replacement parts jobber, the development of flat rates has brought tool equipment to a position of major importance.

And the car manufacturers, whose business is vitally affected by the service rendered by general automotive jobbers and replacement parts jobbers to car dealers and independent repair shops and thence on through to car owners, had little or no place in the programs of either of the conventions and were hardly more than curious observers at the shows.

Can that $250,000 a year be used to induce car makers to come in and tell the wholesalers how the wholesalers can better serve them, their dealers and their owners? The price would be cheap for one idea of that kind coming from the car manufacturer and distributor side of the house.

A market development plan will accomplish worthwhile results if it has as its backbone the fundamental purpose of getting merchandise from the maker to the consumer satisfactorily, at a reasonable cost to all concerned, and at a reasonable profit to those who perform the service.

The market development plan, whatever the details may be, will not—cannot—"high-pressure" more merchandise into the possession of dealers and car owners. It will not—should not—develop any public "consciousnesses" like a silk underwear consciousness.

The long-suffering public has been high-pressured into a lot of over-stimulated buying recently. Sales managers with their own or a predecessor's "last year's mark" to beat may convert us into a nation of violet-breathed, ruby-lipped, velvet-skinned, boyish-figured, sleek-haired victims of the "consciousnesses" developed by high-powered merchandising. But already there are signs of rebellion in the ranks of consumers, and boards of directors who supply the money to make the mare go are sensing a gradual lowering of the point of diminishing returns in this type of merchandising campaign.

A market development campaign for the automotive industry must be basically a greater-service-to-the-consumer campaign.

Whatever the Automotive Equipment Association does in a merchandising way in the next three years will benefit the entire industry and whatever its individual members gain through it will be a very small part of the returns on the job they do. The results will be in proportion to the effectiveness of the campaign and the effectiveness of it will depend largely on the cooperation that is given this zealous group of manufacturers and jobbers who had vision enough to see past the little difficulties and details that have tripped former efforts toward dealer education and market development, and who at least are willing to invest some of their hard-earned cash in the difficult and often thankless job of pioneering.

Tractor Industry Stabilized by Industrial Market

THAT the steadily increasing use of the tractor in commercial work is a stabilizing factor in the tractor industry was brought out at the joint meeting of the American Society of Agricultural Engineers and the Society of Automotive Engineers held Dec. 1, 2 and 3, at Chicago.

William Parrish, of the International Harvester Co., pointed out that, while crop fluctuations do affect the sale of tractors, this item is of but minor importance, as only 12 per cent of the tractors are used on farms.

The big market for tractors, according to Mr. Parrish, lies in the industrial field. The increasing use of the tractor industrially dates from the time it was recognized that farm and industrial tractors were not interchangeable.

Industrial application requires more speed to prevent traffic congestion. More speed requires better protection of the machine from road shocks. Driving in traffic also requires good brakes, and for convenient control a foot accelerator. Then too, while the farm tractor averages only about 50 days of active service a year, the industrial tractor rarely misses a day.

Of the different industrial applications of the tractor, road building and maintenance claim a good share of the units. T. Warren Allen, chief, division of control, U. S. Bureau of Public Roads, in his paper, "The Use of Tractors and Automotive Equipment in Connection with Road Building and Maintenance," mentioned a number of advantages and also some shortcomings in the units available today.

Some of the improvements that Mr. Allen advocated were, changing loading machines so that they could store their material while wagons or trucks were being changed, instead of having to be stopped; production of power units that could meet obstacles such as grades, soft spots, and mud without having to be of excessive size for average work; the development of trucks that can turn on a much shorter radius than at present; the increasing of the proportionate length of body to total length of a truck so as to shorten the interval which an elevating grader must be inoperative during interchange of trucks.

From the agricultural point of view the meeting carried a message of vital interest. Thomas D. Campbell during his address mentioned that many of the abandoned and unprofitable farms in the United States could be made profitable by the intelligent application of automotive power.

His contention is that there is considerable similarity between the man who "manufactures" agricultural products and the man who manufactures any other product. No factory utilizes human or animal power where other power can be obtained. To do so would be too costly. The same holds true on the farm.

Just Among Ourselves

It's Easier to Damn Than to Praise

EVER realize how hard it is to praise anything and make it interesting? We heard George Jean Nathan criticized as a dramatic critic the other day because, it was claimed, "He doesn't know how to praise a play. He is lively and interesting to read only when he is knocking." The essence of news is conflict. The most enthralling orators are those who tell what's wrong with the world; the most gripping writers those who sing the frailties and absurdities of life. In every medium of expression, unfavorable criticism is easier to make interesting. Maybe that's the reason for the preponderance of unfavorable criticism in the world.

* * *

But We Find a Book We Can't Damn!

WE admit to the same difficulties which beset other writers in this regard—and, incidentally, feel very badly about it from time to time. Just now the subject is particularly in our mind because we should like to be able to write something about a book we've just completed which would be so enticing as to make every executive in the automotive industry rush out and read it. Under the none too thrilling title, "The New Leadership in Industry," Sam A. Lewisohn has written what seems to us to be the sanest, best balanced, most moderately phrased and practically useful book about industrial relations that has been published in many moons. Mr. Lewisohn, as we interpret his book, sees the handling of relations between employers and employees as a matter necessitating sincerity and broad-mindedness in the day-to-day relationships of industry, the training of technical executives to some extent at least in psychology and human values and the assumption by management of the full responsibility for the proper solution of the labor problem. Summarizing, for example, he says, "Improvement toward an attainable goal in the relations between employers and employees must be worked out by successive steps in an intensive manner. Upon the progressiveness of the employing classes, primarily, such an orderly solution of our industrial labor problem depends."

* * *

His Job Gives Him the Executive's Slant

BUT we musn't start quoting or there'll be no end. "Once the problem of organizing human beings has been invested with the prestige that will arise from the awakened interest of major executives," Mr. Lewisohn says, "it will seep down through all grades of executives. It is a problem which must be understood by the entire hierarchy of executives." Mr. Lewisohn shows a brilliantly clear understanding of the practical as well as the theoretical questions involved in industrial relationships, points sharply the relationships between various mechanical and psychological values too often dissociated in the executive mind, and makes his whole case for tolerance and study with a scrupulous care as to accuracy of statement which well typifies the spirit of the ideas he propagates. He probably will be disliked by extreme conservatives and extreme radicals alike, but it is evident both from the text of this book and his record as an industrial executive that he knows whereof he speaks. He is vice-president of the Miami Copper Co. and speaks as one industrial executive to another. . . . And that's all on that subject for this time—although we doubt our ability to keep Mr. Lewisohn wholly out of our discussions for some little time.

* * *

We Should Have Added, "On Six-Cylinder Chassis"

HOW quickly are forgotten the snows of yesteryear! A few weeks ago we published a photograph of the new Essex four-door sedan with the caption, "This is the first four-door closed model Essex has built." But not so, David Gregg of supercharger fame hastens to inform us. "Perhaps you have forgotten," he writes, "that Essex built a four-door sedan on the original four-cylinder chassis. We still have one of these cars, purchased in 1919, that is giving excellent service after eight years of constant use. Incidentally, it sold for around $2740—rather different from the present price of $795."

* * *

Extra Points for Sales of Two-Door Sedans

JUST happened to notice that in a special prize sales campaign being put on by the Oakland-Pontiac organization, the points awarded to salesmen for the sale of a two-door sedan are three times as great as the points awarded for the sale of a de luxe sedan and one and one-half times as great as those awarded for the sale of a standard sedan. The points awarded for a used open car sale are 10 and for a used closed car sale five. The contest, which has been running during the fall, has been surrounded by a timely atmosphere. The points are listed as yards gained, as in a football game.—N. G. S.

Potential Market Seen for 2,000,000 Trucks on U. S. Farms

Only about 500,000 now used in agricultural pursuits but estimates based on farm acreage and production indicate that four times as many could be employed advantageously.

By K. W. Stillman

ULTIMATELY there may be as many as 2,000,000 trucks employed in agricultural pursuits in this country. This may seem a rather surprising statement in view of the fact that after some 25 years of motor truck selling only about 500,000 are now operated on farms.

There are three types of farming in which adequate transportation is a very important factor in determining the success of the enterprise. These are dairying, fruit growing and the raising of truck crops. In each of these lines it is very important that the produce be delivered to the market as quickly as possible and with a minimum of disturbance, so that trucks can be used with particular advantage.

In this country about 2,000,000 of the total 370,000,000 acres of improved land are devoted to truck farming.* The average size of a truck farm is about 60 acres. It has been estimated by agricultural authorities that a truck patch of 10 acres will provide sufficient transportation needs to make the use of a single motor truck profitable. With such a small tract a truck of low capacity would probably be used and with larger tracts, instead of increasing the number of trucks, an increase in the size of the unit operated might be satisfactory. For this reason it is uncertain at just what point in increasing acreage of truck farms a single truck would fail to meet the demands and more than one truck would be needed.

It is likely, however, that if 10 acres make the use of one truck profitable, allowing 60 acres per truck—regardless of the truck's size—will be a fairly conservative estimate. This is borne out by many known instances of truck farms smaller than 60 acres which find profitable use for two and even three trucks.

TABLE 1
Estimated Sales Possibilities of Trucks for Farm Use

Truck Farms	33,000
Dairy Farms	200,000
Fruit Farms	280,000
All Others	1,500,000
Total	2,013,000
Number of trucks now on Farms	500,000
Future Market	1,513,000

Allowing one truck for each 60 acres of the 2,000,000 acres devoted to truck crops, slightly over 33,000 trucks could find profitable employment in this work.

Approximately 20,000,000 dairy cows furnish milk, cheese and butter for this country. According to authoritative estimates, the transportation needs developed by each group of 30 of these cows would be sufficient to keep a single truck in profitable operation. Here again, a small truck was probably in mind when this estimate was made and an increase in the number of cows served would not mean, necessarily, an increase in the number of trucks needed.

100 Cows Per Truck

By assuming 100 cows, instead of 30, as the unit of dairy products capacity which could provide employment for a single truck of average size, the factor mentioned before will be cared for and also the fact that many trucks used for dairy purposes will also be used for other farm work so that a certain amount of duplication may be expected between these estimates and those to be made later.

If this estimate of 100 cows per truck is reasonably correct, as it appears to be, it is evident that 200,000 motor trucks can be used solely for the purpose of hauling food and supplies to, and their products from, the 20,000,000 dairy cows in the country.

No acreage data for fruit crops are available but the average annual production of fruit of all kinds is about 288,000,000 bushels. Based on a number of known fruit farm truck installations and estimates of truck utility for such work made by farm advisors it appears to be a conservative assumption that the hauling necessitated by the production of 1000 bushels of fruit would make the use of a motor truck profitable. With this index taken as a fair average it is evident that some 280,000 trucks might be employed on the fruit farms of the country.

On other types of farms it is more difficult to devise an index number with relation to truck utility. Every farm has certain transportation needs but the variety of crops grown; the size of the crops, which depends to a large extent upon the size of the farm; distances to rail heads; condition of roads leading from the farms to the market, and similar factors, have a very great influence upon the utility of truck transportation. Unfortunately, it appears quite impossible to measure the influence of these various factors so that any index of truck utility for farms in general must be more or less of a guess.

* Much of the data upon which the story is based was supplied by *The Farm Journal*.

From many surveys made by various agricultural agencies it appears that the size of farm which can find profitable use for at least one motor truck is considerably smaller than has commonly been supposed. A large number of farmers operating 100 acres or less of land, no more favorably located in regards to markets, good roads, etc., than that of their neighbors, and raising only the average kind and amount of crops have found trucks to be distinctly advantageous to them.

It is likely, of course, that the farmers who now own trucks and who have made these favorable comments upon truck utility for their work, are of the more progressive type and, probably, are better equipped to make profitable use of their mechanical equipment than many others. For this reason it would be too optimistic, possibly, to hope, in spite of the success of trucks on many small farms, that every farm of 100 acres could employ a truck with profit. If the size of the farm is doubled and 200 acres are taken as the size tract which might support a truck, present experience indicates that the resulting calculation would be conservative.

Assuming the average truck farm to consist of 60 acres, the average dairy farm of 230 acres and the average fruit farm of 100 acres about 70,000,000 acres are found to be devoted to these three types of farming, leaving 300,000,000 of the total 370,000,000 acres of improved land in the country for all other types. Allowing one truck for each 200 acres of this territory a total of 1,500,000 trucks is indicated as the number required.

The total estimated requirements for all farms then is about 2,000,000 trucks or, in view of the present farm truck registration, of about 500,000, a potential market for new sales of some million and a half trucks is indicated.

It may be asked with reason, why, if there is an economic need for so many trucks, have not more been sold already through the intensive sales efforts that many truck manufacturers have directed at farm markets. One answer to this, at least, seems to lie in a fact pointed out in an editorial in *Automotive Industries* a few weeks ago—that the ultra-conservatism of the average farmer has prevented him from adopting improved machines and methods until they have undergone a most thorough and painstaking investigation of their merits and a long probationary period as well.

Must be Educated to Use

This characteristic of the farmer is, possibly, the most potent reason why the time may still be far in the future when there will be two million or more farm operated trucks in this country. His inherent skepticism makes a most effectual item of sales resistance and only after a long period of further education is it likely that he—the average farmer—will be convinced of the utility of a truck to the point of purchasing one.

The future should witness a more rapid adoption of this view than has been seen in the past for the farmer is using more and more machines in his work and each one which proves successful should lessen sales resistance to every other piece of equipment of similar nature. There are nearly 4,000,000 passenger cars owned by farmers and about 585,000 tractors are employed in agricultural work. That continuing use of these automotive products will lessen sales resistance to motor trucks seems sure.

In this connection it is evident that the extensive ownership of passenger cars among farmers has had, in itself, a certain detrimental effect upon truck sales. A very considerable portion of these farm-owned passenger cars do double duty and are often as frequently employed for hauling small loads of produce or supplies as they are for carrying the farmer and his family.

To the extent that this has taught the farmer the uses and advantages of automotive equipment it has been beneficial to the truck industry. As more information is dispersed concerning farm economics it may be expected that farmers will see the value in specialization of their automotive equipment. Passenger cars will be needed and used for carrying members of the farm community either for business or pleasure; tractors will be employed for draft work about the farm and trucks will serve as freight carriers between the farm and markets.

Specialization Will Continue

This tendency toward specialization will probably be aided by the existence of the various types of operation or ownership into which agricultural trucks are now divided and which may be expected to remain in the future.

There appear to be four distinct ways in which a truck can be operated on farms. The most obvious one is the case where the truck is owned and operated by the farmer himself. A second is represented by the farmer who has certain hauling to do but is not convinced of the advantages of ownership and hires a truck owned by a neighbor. This represents a surprisingly large proportion of present truck operations on farms and this group of farmers, which has gained first hand information regarding truck utility without ownership, would appear to make exceptionally good prospects for new sales.

A third type of truck operation is represented by trucks owned cooperatively by a group of farmers. Cooperative fruit and dairy associations are frequent adherents to this plan which apparently is quite satisfactory in giving adequate transportation service to farmers who, under ordinary circumstances, might feel unable to own a truck. These cooperative trucks are generally employed only for the particular purpose of the association. Thus the trucks owned by a dairy association would be used almost exclusively for the transportation of dairy products. While this might care for a major portion of the transportation needs of the farmers making up the association, each one of them will have special transportation jobs which will still make them proper prospects for truck sales as individual farmers.

The last of the four types includes operation of trucks not owned by farmers but which are devoted to hauling farm produce. In the Middle West a number of elevator companies have acquired truck fleets for the purpose of collecting and bringing to the elevators the

TABLE 2

Number of Trucks on Farms

	No. Farm-Owned Trucks	No. of Farms	No. of Trucks per 100 Farms
1920	139,000	6,500,000	2.1
1921	150,000	6,600,000	2.3
1922	275,000	6,700,000	4.1
1923	325,000	6,800,000	4.8
1924	368,000	6,900,000	5.3
1925	479,000	7,000,000	6.9
?	2,000,000	7,000,000	28.6

products of the surrounding farms. This movement may be carried much further in the future than it has been in the past but, as is the case with the cooperative owned trucks, individual transportation needs of the farmers served by the company-owned trucks are not cared for by this method and they still remain truck prospects.

Although an ultimate farm motor truck population of 2,000,000 seems large when compared with the number now in use it diminishes, apparently, in relative size when considered in other lights.

The total income of farmers during 1924 was about $12,000,000,000 and the average income per farmer about $2700. It has been estimated that, theoretically, a farm which produced $3000 worth of crops yearly could make profitable use of a truck. Two million trucks would represent a truck per $6000 of income.

Farm Population 31,000,000

The total farm population is about 31,000,000 of whom 9,800,000 are adults actually working on the farms. With 2,000,000 trucks on the farms there would be one truck per 14 persons or one for every 4.5 workmen.

The advantages of trucks on farms are many but probably the most important is the possible saving in time. From a large number of surveys made by various farm agencies it is evident that using a truck instead of draft animals for hauling between the farm and market saves about half the time formerly needed. This saved time is utilized in two ways. Either the farmer can use it in farm work, thus accomplishing more with less help, or another and better market farther away from the farm can be reached in the same length of time as was formerly required to get to the nearest one.

In an extensive survey of farms in the East 90 per cent of those queried gave time saved as the main advantage of trucks. In a similar survey of corn belt farms about 93 per cent agreed with this viewpoint. In a country wide survey 33 per cent of truck-owning farmers stated that the use of trucks had enabled them to change to better markets than could be reached otherwise and that the average distances to these markets had been increased from 8 to 16 miles.

Another important advantage of trucks is the ability to get produce to the market immediately after it has been harvested. The greater freshness of the produce obtains better prices, there is less spoilage and the greater range of markets made available by the trucks makes it possible to market a larger proportion of the crop. This last consideration is of particular importance since it has been estimated that a large part—possibly half—of perishable farm products never reaches the market through lack of transportation.

In 1924 the Department of Agriculture queried all farmer owners of trucks as to their suitability for farm use. Ninety per cent of those replying believed that their trucks were profitable. When one considers that these farmers operated all sorts and sizes of farms and in all sections of the country the unanimity of their approval is rather striking.

One objection frequently offered to the purchase of a truck is that the farmer already has horses and even though a truck might prove profitable when considered by itself it would not be so if its purchase meant the forced sale or idleness of the horses already owned. A partial answer to this viewpoint is seen in the fact that usually a truck does not supplant horses but only supplements them. On the average the purchase of a truck eliminates one horse or mule.

TABLE 3

Farm-Owned Truck Data

	Farm-Owned Trucks	Total Trucks	Per Cent on Farms
Alabama	2,700	23,200	11.7
Arizona	1,300	9,100	14.3
Arkansas	4,000	24,300	16.4
California	21,500	214,600	10.0
Colorado	6,800	18,900	36.0
Connecticut	5,900	37,400	15.8
Delaware	2,900	7,800	37.2
Dist. of Columbia			
Florida	8,500	50,000	17.0
Georgia	5,600	30,700	18.2
Idaho	1,700	7,800	21.8
Illinois	15,200	161,200	9.4
Indiana	14,100	98,200	14.4
Iowa	24,800	46,500	53.3
Kansas	12,400	47,100	26.4
Kentucky	2,900	26,500	10.9
Louisiana	4,000	31,000	12.9
Maine	4,400	26,600	16.6
Maryland	9,800	12,400	79.0
Massachusetts	17,200	90,500	19.0
Michigan	13,600	103,800	13.1
Minnesota	13,800	45,200	30.6
Mississippi	3,400	18,100	18.8
Missouri	14,100	60,600	23.2
Montana	4,000	12,500	32.0
Nebraska	20,900	37,000	56.5
Nevada	400	3,400	11.8
New Hampshire	3,400	8,500	40.0
New Jersey	12,900	122,400	10.5
New Mexico	1,000	2,100	47.6
New York	40,700	316,400	12.9
North Carolina	7,000	28,900	24.2
North Dakota	1,700	11,200	15.2
Ohio	21,000	165,000	12.7
Oklahoma	10,700	38,000	28.1
Oregon	7,600	17,000	44.7
Pennsylvania	44,800	194,700	23.0
Rhode Island	2,100	17,600	11.9
South Carolina	6,400	16,300	39.3
South Dakota	4,600	13,900	33.1
Tennessee	3,800	25,200	15.1
Texas	27,200	91,700	29.7
Utah	1,400	9,000	15.6
Vermont	2,500	5,000	50.0
Virginia	12,500	36,100	34.6
Washington	11,200	51,600	21.7
West Virginia	6,000	26,800	22.4
Wisconsin	12,900	66,200	19.5
Wyoming	1,700	5,200	32.7
Total	479,000	2,513,200	19.1

This is true because trucks have proved to be of little value in hauling about the farm. The periods of loading and unloading occupy such large parts of the total trip-time that the greater speed of the truck over animals appears to be of little advantage. Then, too, the absence of roads or even of paths to many locations about a farm where hauling is necessary is another serious obstacle to the use of trucks for this purpose so that tractors and draft animals, instead of trucks, are likely to be used in the future as they have been in the past.

Even the elimination of one horse means something in the expenses of farm operation since it has been estimated that the upkeep of a horse for a year amounts to about $160. This will go quite a ways toward meeting the operating expenses of a truck.

The number of horses on farms has steadily decreased for a number of years while the average age of those still in use has increased, so that horses are performing less work than ever before and are taking more time to do it. The average age has increased because of the very great decrease in city markets for horses where motor trucks have, to a very large extent, supplanted horse-drawn vehicles. It used to be the practice of farmers to work their horses on the farm until they reached the age of eight or nine years and then sell them into city service where speed was not essential. This market having almost vanished, these old animals must be kept and used on the farms.

In a survey conducted by the Goodyear Tire & Rubber Co. 33 per cent of non-truck-owning farmers covered in the investigation gave lack of funds or other financial reasons for not buying a truck. Of this group, however, 62 per cent owned automobiles.

Used only for the more or less infrequent trips to town for supplies and equipment and to the markets at harvest time it is rather surprising to learn the extent to which farm-owned motor trucks are operated. Whether the possession of a truck makes possible many trips which could not be considered before or what the reason is, it is evident that farmers owning trucks make much more frequent trips away from the farm and cover many more miles than was ever possible when horses were depended upon.

In the corn belt, according to surveys, a truck is operated an average of 72 days per year and travels about 2000 miles. The average cost per ton-mile is about $0.23, almost 50 per cent less than the similar cost for horse-drawn vehicles. On eastern farms the average number of days trucks are used per year varies from about 125 for crop farms, through 160 days for fruit, truck and general farms to 240 days for dairy farms. The average yearly mileage on all farms is about 3800 miles. In this district the operating costs per ton-mile were found to be about $0.50 for small trucks, decreasing to $0.18 for those of two-ton capacity.

Farmers are becoming better informed each year and their appreciation of the advantages of mechanical equipment is also increasing. Wherever they have been used on farms motor trucks have given convincing evidence of their economic superiority over other methods of transportation. This fact will become more apparent as time goes on and, coupled with the increasing progressiveness of the farmers, the task of selling the next half million trucks should not be nearly as hard as that of selling those they now operate.

Ottawa Newspapers Make Stand Against Free Factory Publicity

THE daily newspapers of Ottawa, Ontario, have completed practically a year during which they have not devoted news space to free automobile publicity from any trade source.

The papers have continued with extensive automobile sections throughout the year but the news columns of these departments have been filled with mechanical suggestions, highway news, and bulletins, Government announcements, automobile club announcements and discussions and articles dealing with general mechanical trend. Not once has a so-called "factory-baked" reader appeared, except when it has been published as advertising and on an advertising contract. There was one occasion, too, when the Ottawa automotive trade conducted a spring opening and the publicity bars of the newspapers were let down to a certain extent; each local dealer was allotted definite space for news regarding his organization and the models which he was handling, nothing else.

It had been felt in Ottawa that factory news, particularly of the cream-puff type, tended to destroy reader faith in legitimate news and editorial expression in the automobile sections. The reader now finds legitimate news on the automobile page and likes to read it because it is news.

The automobile dealers of Ottawa are better satisfied under the new arrangement because they feel that there is now no question regarding the real nature of the news on the automobile pages. For another thing, they are all being treated alike—none gets a line of reader-space on any pretext and there is no argument that a business rival is being favored in the quantity of trade news.

That the elimination of free automotive publicity should be impartial to be permanently effective was indicated recently. On receipt of notice from a daily newspaper publisher that it was contrary to the policy of his newspaper to give free automobile advertising in the form of a reader, a large United States motor car manufacturer wrote the Canadian publisher agreeing that the latter was justified in adopting such a policy provided it were inforced absolutely and impartially.

Some advertising agents have been quite active in supplying news for the automobile pages of the Ottawa newspapers but the names of certain companies of the industry have been conspicuously and rather freely mentioned in the copy. Taking the stand that this sort of "news" really decreased the true value of display advertising, the Ottawa newspapers have rejected all of the proffered publicity.

One newspaper in Ottawa became greatly "fed up" with the requests from varied sources for free publicity on this and that trade subject and also with the arguments from some dealers regarding publicity treatment, mostly imaginary grievances, and adopted the non-publicity stand and the other local newspapers quickly followed suit.

A newspaper in another eastern Ontario town has adopted the policy of publishing a certain amount of free trade publicity but the only heading that such readers bear is one that gives the name of the car in 18-point type along with the word "Publicity"—also in 18-point type.

The two leading newspapers of Ottawa, Ontario, are the Journal and the Citizen, both of which have adopted the anti-publicity policy.

Thread Miller is Adapted for Production of Differential Carriers

Hall planetary machine offers interesting possibilities in accurate boring and shouldering operations.

By W. L. Carver

BESIDES being adapted to a wide range of threading work, the Hall planetary thread milling machine (Fig. 1) offers interesting possibilities in the way of accurate boring and shouldering operations. Both roughing and finishing operations can be performed, and the latter can be combined advantageously with the regular threading operations. The machine is particularly applicable to differential carrier production, in which line of work it effects a saving of time and of equipment and insures a high degree of accuracy.

Some of the machines already are in use for boring and threading operations on these parts, and from the experience with them the manufacturers have developed an interesting series of operations. A typical example of the earlier practice is illustrated in Fig. 1, while the actual tooling is shown in detail in Fig. 2. In this case, which differs from the recent development, the mounting flange is finished before the carrier is placed in the planetary thread miller for the pinion bearing operations. The carrier is mounted on a heavy cast bracket which is transferred from the loading to the working position and vice versa by an air cylinder at the tail end of the machine. Clamping is accomplished by a roller device, as shown. Thread and mill-

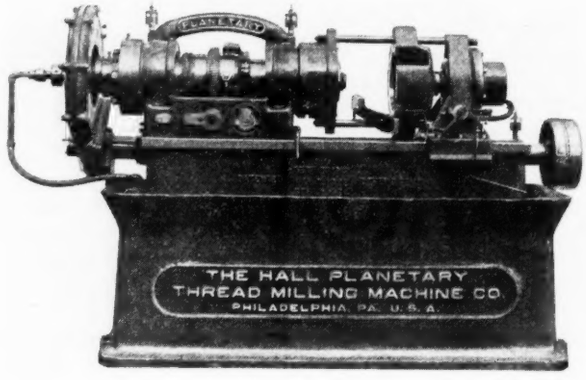


Fig. 1. Hall planetary threading machine equipped with air-operated fixture for boring and threading the pinion end of a differential carrier

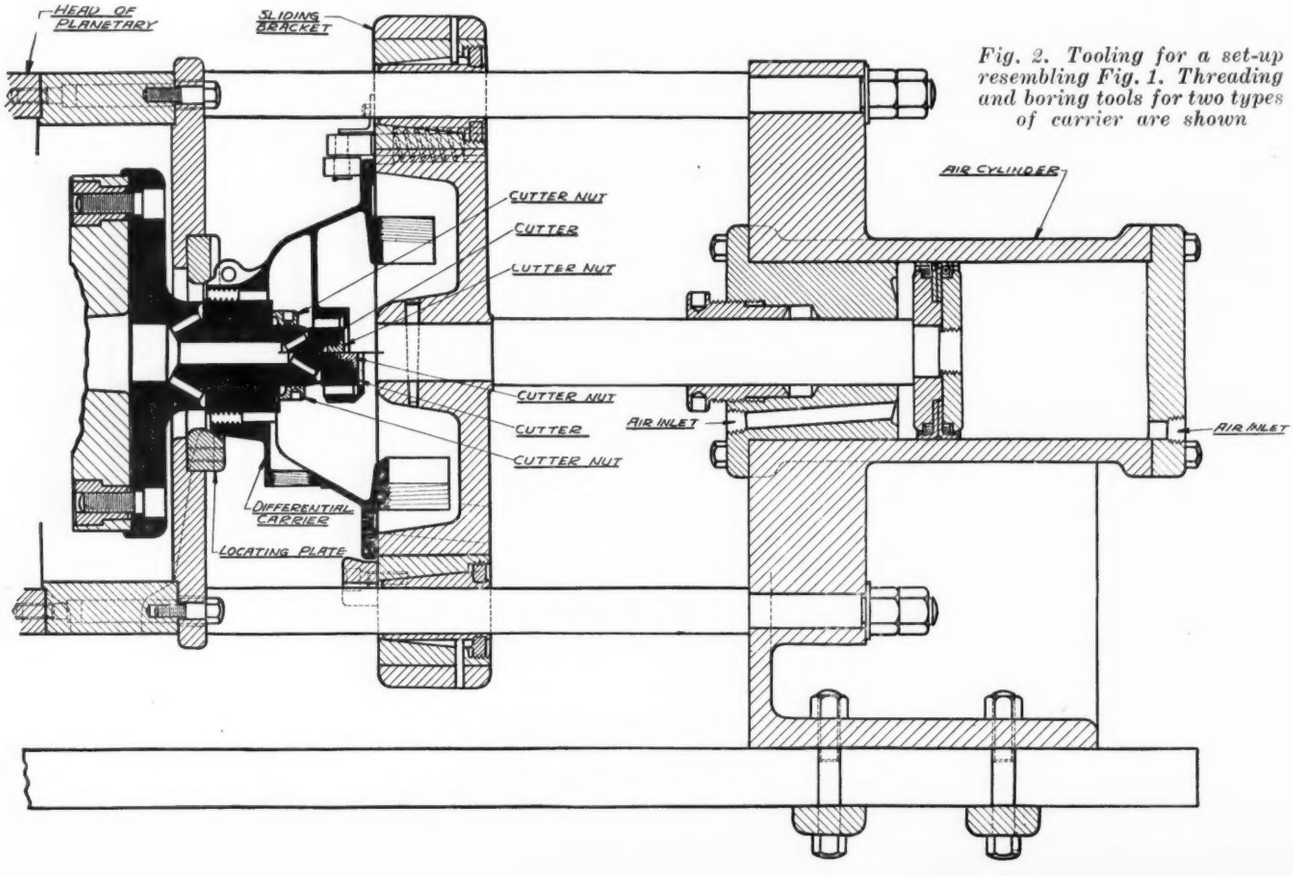


Fig. 2. Tooling for a set-up resembling Fig. 1. Threading and boring tools for two types of carrier are shown

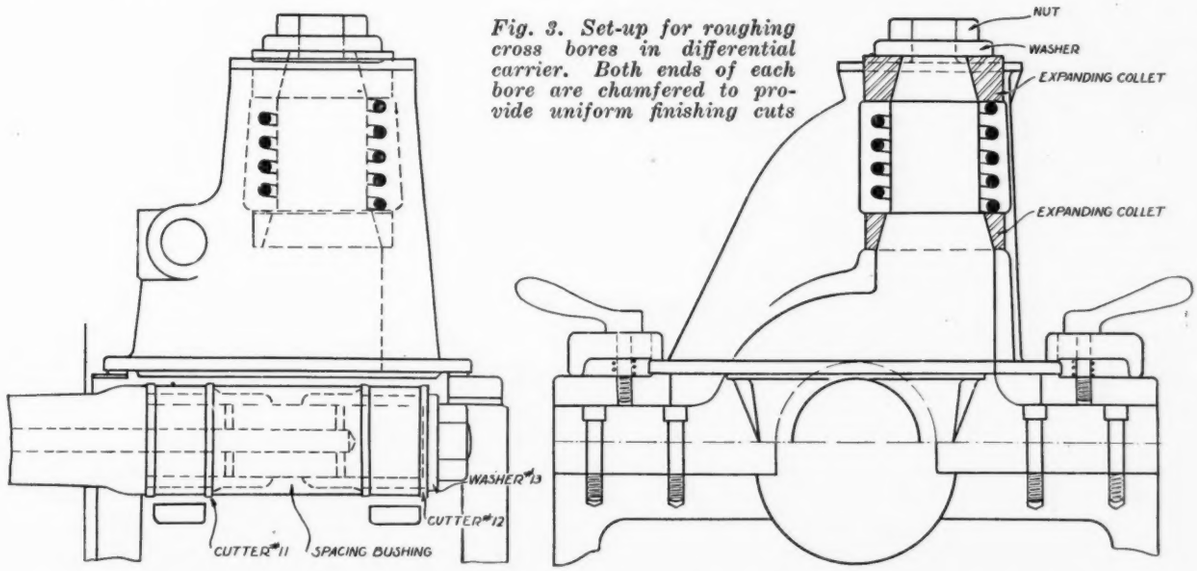


Fig. 3. Set-up for roughing cross bores in differential carrier. Both ends of each bore are chamfered to provide uniform finishing cuts

ing cutters for two different types of differential carrier are indicated. A loading support is shown by Fig. 1 while in Fig. 2 a centering ring at the headstock contacts with a turned chamfer at the front end of the carrier. This installation is shown in order to trace the development of the newer improved method.

The new group of operations is based on an unusual feature of the planetary thread miller. Designed primarily for threading operations, this machine is equipped with a mechanism which advances the cutter by the amount of the pitch in one complete revolution of the planetary head. While this feature is applicable to threading and finish-boring, it is not suitable for operations involving shouldering work. Therefore, the machine is arranged so that roughing operations can be performed with the cutters stationary longitudinally and feeding directly into and around the hole for the preliminary operation, at the same time cutting the customary clearance groove adjacent to each shoulder.

The rough casting is set up as shown in Fig. 1, being located and clamped by the rough flange. Three locating points are used, with the clamps immediately over them. This is done to prevent distortion of the body of the casting, which might result in misalignment of the bearings. After the pinion bearing seat is moved over the cutter head, both thread and bearing diameters are rough bored and the shoulder distances are established with the head in the "no-lead" setting. Cutters of small width are provided for cutting the clearance grooves at the face of each shoulder. All shoulders are milled to the finished dimensions longitudinally.

Transferred to Another Machine

Next the carrier is transferred to another planetary thread milling machine, where the threads are milled and the bearing surfaces are finished. As the shoulders and clearance grooves are established in the first operation, no shouldering work is done in the second machine and the cutters are engaged only in peripheral finishing operations. Threads are finished completely by the thread milling cutters, as the rough holes are smaller than the finished inside diameter of the thread.

Following this operation, the carrier is mounted on an arbor which fits the finished bores of the pinion end and the mounting flange is finish-turned, after which true flange holes are drilled. Then the carrier is set up in another planetary thread miller for the roughing operation on the cross bores. Support is furnished by a hardened ring which contacts with the finished mounting flange, and the carrier is centered at the finished pinion bores by means of expanding collets which fit a heavy vertical post. As shown by Fig. 3, a slotted washer and nut and four clamps at the base complete the clamping and locating means. This machine also is set for "no lead," and the cutter arbor carries a gang of cutters which produce the rough bores, with chamfers at each end. The cutter is drilled to permit outward flow of coolant and chips at each cross bore.

This chamfering is done to provide uniform width of cut for the finishing tools, thereby insuring uniform milling conditions and close finished dimensions. From this machine carriers are transferred to a final finishing thread miller which is set for threading operations, clamping and centering means are identical for these two machines, and indexing is done by dowels which extend into the drilled holes in the mounting flange. In the final operation, the threaded holes for the differential adjusting nuts and the bearings are finish-milled. In the case shown by Fig. 4, no shoulders are involved and the threads are allowed to run out in the bearing bores.

The manufacturer of the Hall planetary thread milling machine is the Hall Planetary Milling Machine Co., Philadelphia, Pa.

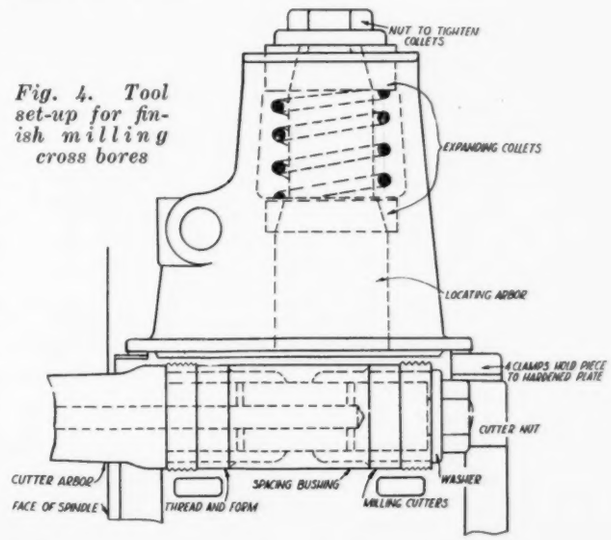


Fig. 4. Tool set-up for finish milling cross bores

Effect of Brake Drum Heat on Bus Tires Shown by Dynamometer

Results obtained in previous tests substantiated by study made by B. F. Goodrich Co. on 20,000 lb. Sprague machine. Four different wheels are tested.

IN a series of tests made with a dynamometer to determine the effect of brake drum heat upon tires of large cross section such as are used on buses, the B. F. Goodrich Co. found that results obtained in other tests, notably that made by the Goodyear Tire & Rubber Co. in conjunction with the Budd Wheel Co., early this year, were substantiated. A report of the Goodrich tests was made at the recent transportation meeting of the Society of Automotive Engineers at Boston by C. W. Bedford and Earnest Blaker and a summary of their paper follows:

The tests were performed on a 20,000 lb. Sprague dynamometer tire testing machine. Westinghouse air brakes with steel shoes were used. Comparative tests were made on four different wheels: Budd disk wheels 20 and 24-in. diameter, a 20-in. Motor wheel and a 20-in. Parker wheel. Ventilating fans were furnished with the Motor wheel.

Two cast-steel brake drums were used, one being of usual design while the other had the corrugations on the surface replaced by a strip of Goodyear super-heat packing 1/32 in. thick and held in place by thin wire. Standard drum No. 1 was tested with all four wheels while drum No. 2 was tested with the three 20-in. wheels only.

During the tests, room temperatures near the dynamometer were taken by recording thermometers. Temperatures of brake drums and of the inter-face between beads and rims were taken by thermocouples. In all tests 6-in. dual tires were mounted on the wheels and run under standard loading and inflation conditions. In tests run to constant brake drum temperature, the braking effort was varied by a hand screw to hold the temperature constant until an equilibrium temperature was reached in the bead directly over the drum. Tests were then repeated, maintaining a constant brake horsepower until corresponding equilibrium temperatures were obtained for both drums and beads.

In this manner a series of drum and bead temperatures with corresponding brake horsepower were obtained, and used for plotting results.

In Fig. 1 is shown a comparison of the four wheels, using the standard drum No. 1, on the basis of brake horsepower to bead temperatures, and in Fig. 2 on the basis of drum to bead temperatures. Note that the three 20-in. wheels maintained the same relative position but are farther apart on the brake horsepower curves than on the drum temperature curves. Also note that the relative position of the 24-in. wheel and the Parker wheel are reversed in the two charts. The data shown in Fig. 1 take into consideration the relative cooling of the brake drums on the wheels, both by conduction and convection, and probably are more nearly comparable with service conditions than the results in Fig. 2.

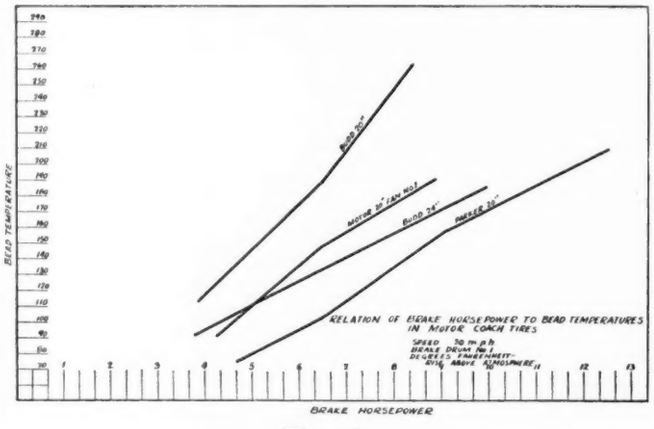


Fig. 1

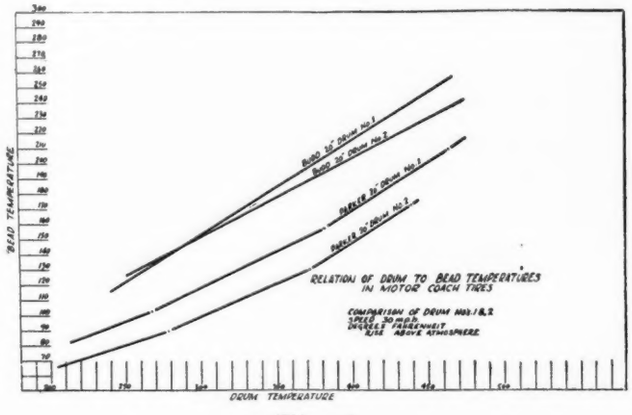


Fig. 2

Fig. 3 shows the effect of speed on the relation between drum and bead temperatures and indicates that in the three 20-in. wheels the cooling action increases with the speed of rotation between the limits tested and that speed has the same relative effect upon each of the three wheels.

Tests also were conducted to verify the statement often made that tire failure sometimes results from simple flexing of the tire without the aid of brake heat, and convincing proof was obtained of the impossibility of securing ruinous temperatures by this means.

The summary and

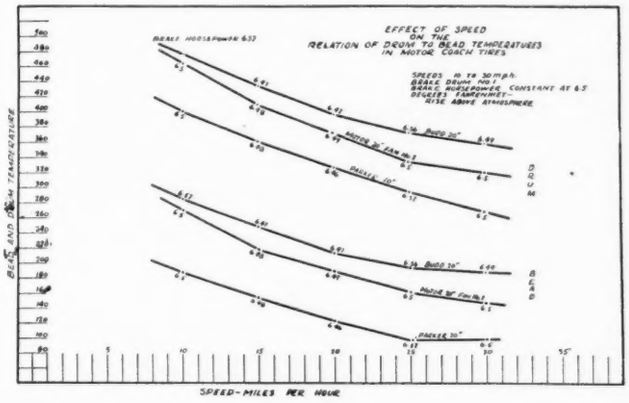


Fig. 3

conclusions of the Goodrich tests are as follows:

1. The relative cooling action of the four wheels tested is found to be substantially in the same order as reported in the Goodyear-Budd tests.

2. Comparison of the four wheels on the constant brake horsepower basis shows a wider difference in the same order than comparison on the basis of constant drum temperature. Comparison on the basis of constant brake horsepower more nearly reflects the relative value of the wheels in service.

3. It appears that the greater the cooling action of a wheel the greater the error in comparing it with other wheels on the basis of constant drum temperature.

4. For the heat dissipating devices tested, about the same relative improvement was noted on all wheels.

5. The cooling properties of a wheel increase with the speed of rotation for a given brake energy input.

6. Variations in speed do not materially change the relative cooling action of the 20-in. wheels.

7. Forced ventilation by external fans is indicated as an aid for securing dissipation of brake drum heat.

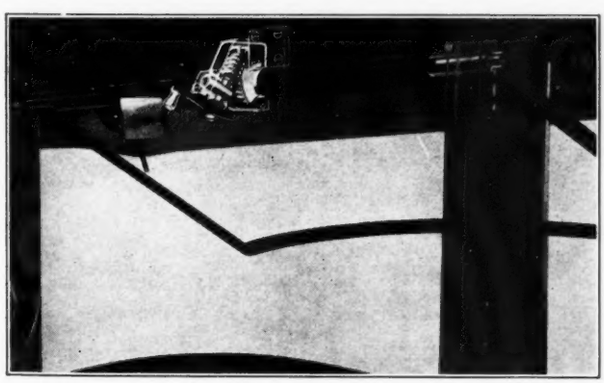
8. Burned beads can not result from heat due to tire flexing but must be attributed to brake drum heat.

9. Excessive flexing due to under inflation, heavy loading, or high speed will accentuate the effect of brake drum heat on the bead by decreasing the temperature gradient between the bead and the tread.

Mono-control Windshield

THE Mono-control windshield, a recent development of Motor Products Corp., Detroit, can be operated by one hand, does not use swing arm sectors and can be swung out from the top to a 60 deg. opening. It is not hinged at the top but is swung at either end of the top cross member on steel trunions which engage in bronze bushings set in the corner posts. In assembling, the shield is set in place, the trunnions slipped into the bushings and locked with set screws and the flange of the mechanism bolted to the header.

The operating mechanism consists of a worm and gear fitted with spring adjustments to compensate for radial play, end thrust and wear. It is inclosed in a die-cast housing packed with grease. It operates by a small crank which may be located at any position along the top cross member. Eight revolutions of the crank raised the shield from closed position to a 60 deg. opening. Rubber seals at the top and sides are used to make the shield water-tight. The frame is held together by telescoping screws at the upper corners.

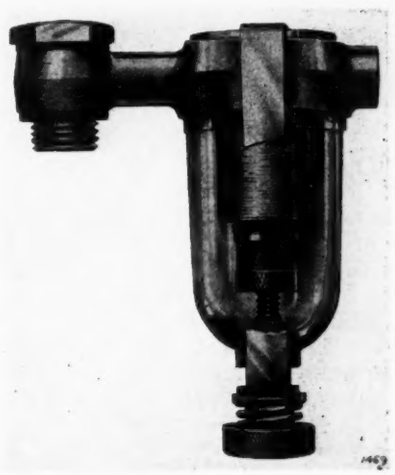


Mono-control windshield with operating mechanism and method of suspension shown in phantom.

Zenith Fuel Filter

A FUEL filter making use of disk-shaped filtering elements is being introduced by the Zenith-Detroit Corp. The unit consists of 200 thin brass washers and spacers, which allow the gasoline to pass through openings 0.0035 in. wide, this being only one-third the width of the opening in the ordinary 60-mesh gauze.

Gasoline is admitted to the glass filter at the top. The fuel is sucked through the interstices of the washers and passes up through the filter element into the vacuum tank. Impurities removed from the fuel are washed away by the swirling motion of the gasoline while the car is in motion, and settle to the bottom of the glass container. By removing a nut at the bottom of the filter the glass bowl can be removed for cleaning. The nut at the bottom of the element can also be removed and when the retainer is taken off the washers and spacers can be shuffled up and down and can be thoroughly cleaned in gasoline or with compressed air.



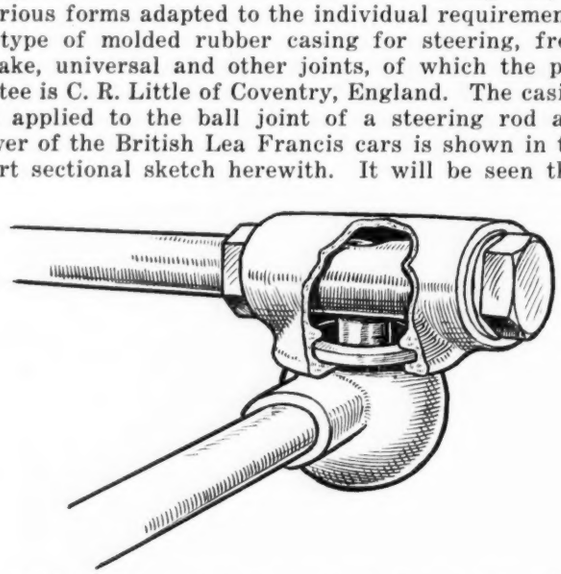
Zenith fuel filter

SEVERAL American automobile manufacturers in Germany have adopted a novel caravan method to demonstrate their cars. One car of each model (which gives 14 cars in the case of one manufacturer) is put in a caravan, or train, which moves over the country with stops of one or more days at each agency. Trained demonstrators show each car and a sales manager is in charge of the group. The plan is said to have increased sales materially.

NEW DEVELOPMENTS—Automotive

Molded Rubber Joint Covers

MOST British automobile manufacturers and several in the United States are testing out, in various forms adapted to the individual requirements, a type of molded rubber casing for steering, front brake, universal and other joints, of which the patentee is C. R. Little of Coventry, England. The casing as applied to the ball joint of a steering rod and lever of the British Lea Francis cars is shown in the part sectional sketch herewith. It will be seen that



Molded rubber casing as applied to one type of steering joint

a spherical molding with an extension incloses the end of the lever and the nut holding the ball pin. This unit has a flange that lies within a groove in the upper half of the casing, and the ends of the tubular section, on the rod, are thickened internally to give clearance to form a grease pocket between them.

Normal rotational movement of the joint is permitted by the flange turning in the groove, the two together forming a grease-tight and dirt-excluding joint. No grease-gun nipple is required, charges of lubricant being introduced at lengthy intervals to the inside of the casing by lifting the grooved lip of the upper unit.

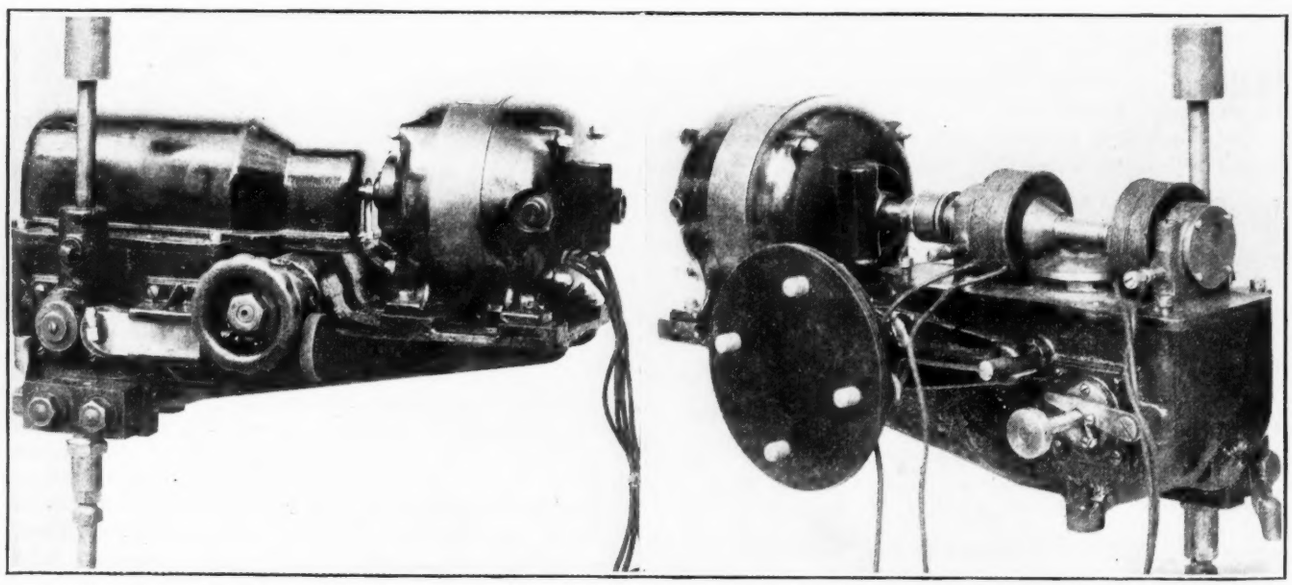
Casings for every known type of steering joint have been made on this principle, as well as for front brake camshaft joints of the Rubury, Perrot, Hotchkiss and many other designs. They are standard equipment for the pushrod joints of four makes of British motorcycles, for which purpose they were originally conceived.

Automatic Arc Welder

A NEW automatic arc welder has been developed by the General Electric Co., with which the operator needs only to push a button, the rest of the operation being automatic. The arc is started by first touching the electrode to the work and then withdrawing it. Thereafter a constant length of arc is maintained by feeding the electrode wire to the weld at the rate necessary to replace the electrode fused into the weld. The new equipment is designed to perform these operations more rapidly and with a greater degree of accuracy than the most expert hand operator.

The mechanism for feeding the electrode to the arc consists essentially of a pair of feed rollers geared to a constant speed motor through a magnetic clutch. The rollers feed the welding wire through the nozzle to the arc. The distance and pressure between these rollers are readily adjustable. Each welding head is equipped with a set of nozzles for 3/32 in., ⅛ in., 5/32 in., 3/16 in. and ¼ in. wire.

The speed of wire feed may be adjusted by means of a selective gear changer. Three gear speed changes can be made by moving the gear shift pin which extends from the rear of the gear housing. An additional finer adjustment can be made by means of a rheostat in the field of the motor. Provision is made for pointing the electrode backward or forward in the line of



LEFT: *Typical welding head.* RIGHT: *Welding head with cover removed, showing magnetic clutch*

Parts, Accessories and Production Tools

weld, and also for moving it from side to side.

The control equipment consists of a control panel, a meter panel and a push-button station. The control panel mounts the main line contactor for the welding circuit and two smaller contactors for interlocking the travel motor with the arc. By means of auxiliary contacts, the line contactor controls the starting and stopping of the feed motor. The magnetic clutch is operated forward or backward by a voltage relay, the coil of which is connected across the arc. Thus the electrode is fed to or from the work automatically, adjusting itself to any irregularities in the surface of the work. One rheostat controls the speed of the feed motor, the other the voltage setting of the arc. Among the automotive jobs for which this welder is suited is that of welding pressed steel rear axle housings.

Heald Grinder Attachments

TWO attachments for its Size-Matic and Full Automatic grinders have been perfected recently by the Heald Machine Co. The first of these is an auxiliary facing attachment for sweeping the face of work which is ground internally at the same setting. The second is a backing-off attachment which moves the regular internal grinding wheel away from the work slightly at the end of the finishing stroke and thus prevents the usual long spiral pattern which is objectionable in some classes of work.

The facing attachment bolts on the main spindle head housing (Fig. 1), and carries a separate motor-driven grinding wheel on angle plate arrangement which brings the axis of the spindle at right angles to that of the work. Correct position of the wheel is determined by the hand wheel shown, while the feed of the wheel across the surface of the work is accomplished by the hand lever adjacent to the splash guard. The sliding unit incorporating the auxiliary grinding head is counterbalanced by springs to facilitate hand operation. No means of power operation of the facing head is provided. The hand wheel controlling the position of the grinding wheel is graduated to allow close setting while the limit of downward travel is established by an adjusting screw shown near the top of the illustration.

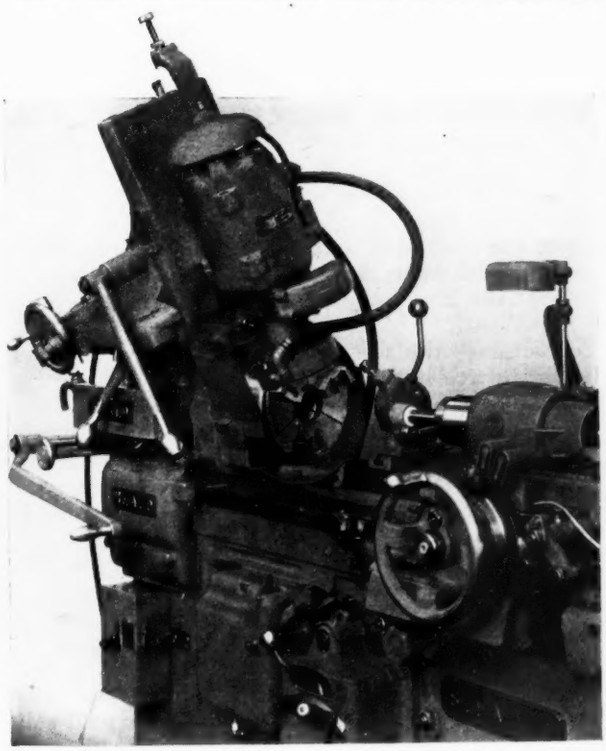


Fig. 1. Facing attachment which can be fitted to recent types of Heald internal grinders. Suitable for finishing surfaces on ring gears and other jobs in which a face is ground square with the internal ground hole

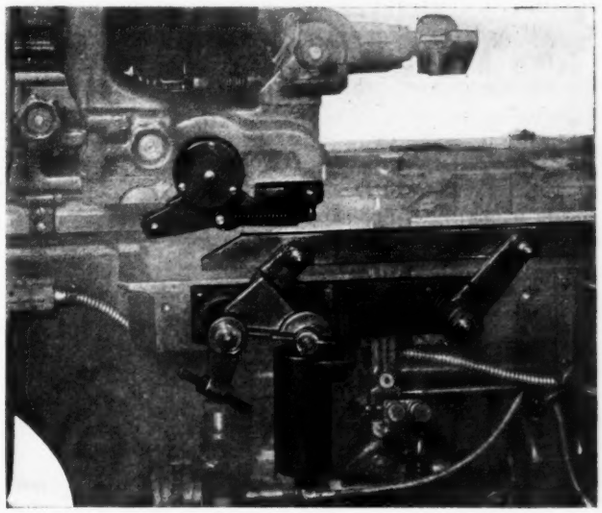


Fig. 2. Backing off attachments for the same machines. This attachment eliminates the long spiral which usually occurs in ground holes

The backing-off attachment, as shown in Fig. 2, is interconnected with the electrically actuated automatic control of the machine and is brought into effect on the final inward finishing stroke. As the mechanism for returning the wheel head to the outward or loading position trips, a cam bar is carried upward by a parallel linkage. This bar engages with special equipment on the head and backs off the wheel slightly so that it turns free of the work on the outward stroke. As this stroke is rapid, the long spiral which usually is left by the wheel is eliminated and the hole presents a full finished ground surface.

R. P. PESCARA, the well-known designer of helicopters, has taken out a patent in Germany for an arrangement for wing surfaces which would combine the airplane and helicopter principles. The idea consists of a biplane arrangement of symmetrical wings, both wings being mounted above the fuselage and having a small gap. The wings are so mounted that in forward flight they act as normal airplane wings, while during descent they can be released and turn in opposite directions about a vertical axis, thus enabling a more nearly vertical descent. No power is supplied to the wings, and they are to revolve only due to the action of the air on them.

New Chromium Iron Alloy is Non-Corrosive, Takes High, Silver-White Luster

Product of the Central Alloy Steel Corp. also has physical properties which make it as workable as low-carbon steel. Suitable for many automotive uses, including polished parts.

RESISTANCE against rust and corrosion under all ordinary conditions is a characteristic of a new high-chromium iron alloy, Agathon Enduro stainless iron, which can be polished to a high, permanent, silver-white luster. In addition, this alloy, which is the product of the Central Alloy Steel Corp., Massillon, Ohio, manufacturer of Agathon alloy steels, has exceptional physical properties and is capable of being fabricated in practically every manner as ordinary low-carbon steel.

Enduro stainless iron is an electric furnace product, made under Armstrong patents and contains 16.5 to 18.5 chromium with carbon under 0.10 per cent. This chromium content is high and since the degree of rust and corrosion resistance depends upon the ratio of chromium and carbon content, a high margin of protection is insured for equipment and parts made of this material.

The weight of Enduro is slightly under that of plain carbon steel, the specific gravity being 7.67. Its melting point is about 2750 deg. Fahr. and the thermal conductivity about one-third that of pure iron. The coefficient of linear expansion is slightly less than that of ordinary steel.

The following tabulation shows the relatively high structural value of the material in various conditions. The annealing temperature for the second column is 1450 deg. Fahr., while all of the data recorded are from tests of ¾ in. round bars, cold drawn to 9/16 in.

	Hot Rolled	Annealed	Cold Drawn	Cold Drawn and Ann.
Ultimate Strength .. Lb. per sq. in.	90-100,000	75-80,000	90-95,000	70-75,000
Yield Point ..... Lb. per sq. in	65-75,000	55-60,000	85-90,000	45-55,000
Elongation in 2 in...	30-35%	25-30%	12-15%	30-35%
Reduction of area ...	55-65%	65-75%	60-65%	70-75%
Brinell	155-165	145-155	195-200	135-145
Rockwell "B"	90-94	86-90	96-100	82-86
Izod	.....	25-35	.....	60-70

When Enduro is cast it is necessary to raise the carbon content to 0.30-0.40 per cent in order to insure sound castings.

These characteristics, which demonstrate the relatively high structural value of the alloy, are overshadowed by the stainless and non-corrosive properties and the full range of workability. In its various forms, the metal can be worked in every way in which ordinary automotive steels of the same shapes and sizes are handled. But two qualifications are necessary to this statement. In drawing operations Enduro may require one or two more breakdown operations than does ordinary mild steel sheet stock. The metal is stiffer than ordinary carbon steel. However, due to the absence of scale, hot pressing is an immediate possibility for deep drawing, etc.

For large deformations, the stock should be annealed frequently at 1200 to 1300 deg. Fahr., followed by air cooling. Ductility of the alloy is increased appreciably when heated to 200-300 deg. above atmospheric temperature. Where possible heavy operations should be carried on under this condition. When starting a series of operations with the cold metal, the magnitude of the working can be increased gradually as the metal warms up.

The other qualification for fabricating or machining is that in turning operations, practice resembling that for copper should be followed. The tools should be given a back and side slope of about 15 deg. Feeds should be set right up to the capacity of high speed cutting steels. In threading, four or five cutting teeth are recommended in place of the usual two or three.

In the automotive industry, Enduro is particularly applicable to pump components, etc., where its complete resistance to rust and corrosion insures absence of pitting, seizing, etc. Crankcase bottom pans and gasoline tanks as well as strainer parts, vacuum tanks, rectifiers, filters and similar details are other units where the permanency of the alloy insures excellent service. Sheets of 10 to 24 U. S. S. standard gage up to 48 in. wide and 120 in. long are available, as are a wide variety of flats, rounds, squares and hexagon shapes in both hot and cold rolled or drawn finishes. Plate stock is made in thickness ranging from 3/16 in. to 1 in. while billets and forging blanks cover a full range of sizes.

From the decorative angle, Enduro is applicable to radiator shells, lamp rings, trim strips, etc., and it is here that the high polish characteristics of the alloy are important.

To facilitate the use of Enduro, sheet stock is obtainable in five different finishes.

Seamless drawn tubing in a wide variety of shapes and sizes also is available for robe rails, steering columns and similar parts. Butt welded tubing also is made for similar parts which are not subjected to high stresses. One of the suggested uses for tubing is for exhaust pipes near the engine.

For very high grade jobs, Enduro offers immediate possibilities for fenders or even for body sheets.

The general characteristics of the alloy can be summed up best in the statement which is made by the manufacturer: Enduro can be spun, forged, welded, riveted, machined, cold worked and case hardened. It resists abrasion, nitric acid, alkali solutions, moist or sea air, superheated steam, fruit and vegetable acids, scaling at high temperatures and sulphides and sulphur compounds. It will not hammer weld, resist sulphuric acid, resist hydrochloric acid, nor air harden (Maximum Brinell, 200).

EDITORIAL

Balancing Road Wheels

IT has long been recognized that front end wobble or shimmy is due to a number of different causes, but in the discussion of these causes not enough attention has been paid, it would seem, to lack of balance of the front wheels. The vibration referred to is, of course, a periodic motion and must have an exciting force of definite period. Now the ordinary cause of chassis vibration is road unevenness, but this seldom is so regularly spaced as to give substantially equal-timed impulses to the wheels. On the other hand, any lack of rotative balance of the road wheels at a definite car speed gives a series of impulses of exactly even time intervals. Moreover, if the heavy parts of the wheels on opposite sides should happen to be located at opposite points of the circle, so that one is up while the other is down, a rocking couple is created which no doubt is the usual cause of the phenomenon known as "tramping."

Periodic vibratory motion can be dealt with in two ways, namely, by eliminating the cause, the exciting force, and by providing additional resistance to the moving parts so that their amplitude will be only small. Evidently the former is the more effective, if it can be applied, and in so far as the exciting cause due to unbalance of the wheels is concerned, it is, of course, not difficult. A number of manufacturers now balance all road wheels, and the practice is likely to become common wherever balloon tires are used on high speed vehicles.

Ideas Which Are Wasted

MANY a good idea gets side-tracked because of its source. Certain men in an organization get a reputation, possibly well deserved, for being barren of good suggestions. Consequently when they do produce a "wow" nobody stops long enough to listen. Then there is the man who is recognized as frequently propounding good thoughts, but whose method of propounding arouses so much opposition that the merit of his idea has to be almost super-marvelous to gain acceptance.

A group of automotive executives were once assembled in a conference touching on an important organization policy. Each of the 10 or 12 seated about the table expressed his ideas in turn. Generally speaking, they agreed. Finally came the turn of a particularly strong executive, known as well for the sharpness of his tongue as for the keenness of his discernment.

"Are you all through?" he queried. Then, receiving an affirmative silence, he began, "Well, you're all exactly wrong. . . . ."

"He practically called us all damned fools," said one of the other executives commenting on the session afterwards. "Before he had talked long, it was evident to most of us that we were and that he was right. But, we couldn't let him get away with that, now, could we?"

That's one situation. Then there's the one illustrated by a bright bit of dialogue from a play now on Broadway, "The Play's the Thing." Says one character, "Now I've just been thinking and I have an idea . . . ." Retorts the other, "Huh, don't let it worry you, you're just having beginner's luck."

What Good is an Engineer?

GIVEN to the right man, an engineering training is not entirely lost should that man turn from his study of technical problems alone and enter other fields.

The processes of analysis he must learn if he become an engineer worthy of the name, the methods of deduction and inductive reasoning applied to the solution of a problem, the ability to formulate an opinion based upon unbiased fact, the qualities included in that phrase "peculiar engineering twist" if you will—all are applicable in a large measure to the fields of sales promotion, marketing analysis, finance or to any branch of industrial or business activity. In addition, the engineer has a wholesome respect for knowledge and experience of any sort plus a seldom equalled appreciation of "the other side of the story."

The automotive industry, perhaps more than any other, has found it possible to avail itself of these additional values possessed by its technical men and there is every evidence that the possibilities along this line will be realized even more fully in the future than in the past.

A Notable Birthday

LAST Saturday the twenty-fifth anniversary of the Bureau of Standards was celebrated with fitting ceremonies and addresses.

"I know of no laboratory," said Herbert Hoover, speaking on that occasion, "no effort of any government which represents so liberal and so generous a support to science as is exemplified in the Bureau of Standards."

The automotive industry has ample reason to add its commendations and congratulations to the thousands of others which must have been received by the Bureau on completing its first quarter of a century of constructive, scientific achievement.

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	GASOLINE PASSENGER CARS										TRUCKS					
	Up to $500		$500 to $800		$800 to $1200		$1200 to $2000		Over $2000		Up to 1 ton		1 to 2½ Tons		Over 2½ Tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Austria					2	$2,322	1	$1,893			4	$2,901				
Azores and Madeira Islands	3	$1,665														
Belgium	98	37,511	84	$57,610	92	104,655	48	74,273	8	$21,660			1	$2,000		
Bulgaria																
Czecho Slovakia			5	4,170	1	1,094	1	1,669								
Denmark	187	88,229	82	57,535	53	53,315	10	13,575	7	18,407			5	6,501		
Esthonia																
Finland			3	2,327	13	14,162	2	2,761	2	5,000			15	22,861		
France			6	4,770	28	29,973	14	22,432	6	15,000						
Germany	55	24,897	137	96,777	86	89,783	20	31,314	39	101,369	2	1,452				
Gibraltar																
Greece			2	1,257					1	6,500						
Hungary	6	2,875	1	618	9	9,453	1	1,361	2	4,963						
Iceland and Faroe Islands																
Italy	2	700			1	1,019										
Latvia																
Lithuania			1	635												
Malta, Gozo and Cyprus Isls	1	555	1	766	1	960										
Netherlands			16	9,916	25	28,506	23	36,570	10	28,445			7	5,731		
Norway	5	3,448	8	5,080	10	11,184	8	14,325	1	2,723			2	5,637	2	$8,122
Poland and Danzig					1	1,233	4	6,685								
Portugal	32	16,126	7	5,528	11	12,257							2	1,596		
Rumania			17	13,076	6	5,991	2	3,707	2	5,000						
Spain	80	25,365	59	44,917	43	45,912	16	26,874	11	32,017	77	21,162	4	4,150		
Sweden			105	75,316	54	62,013	23	37,497	11	27,961	3	2,322	20	21,978		
Switzerland			5	3,232	10	11,809	3	5,845	7	17,930						
Turkey	7	3,359	9	5,941			4	6,610			7	3,887				
United Kingdom	51	22,230	34	24,441	158	161,308	15	21,600	33	82,865	5	4,379	42	51,488	6	9,550
Irish Free State			9	7,373	5	5,415					2	1,160				
Yugoslavia					4	4,231	2	3,468								
United States																
British Honduras	2	650			1	975					1	500				
Canada	437	155,358	445	322,048	263	262,639	94	145,007	90	225,520	87	60,278	101	123,654	16	55,720
Costa Rica	2	1,078	3	1,968	17	17,136					4	2,163	6	7,315		
Guatemala	4	1,249	6	4,442	16	16,839	8	13,609	2	4,600	6	4,075	21	25,031		
Honduras	2	700	3	1,941							1	500				
Nicaragua	1	86			2	1,915							1	2,400		
Panama	2	708	8	6,055	21	22,940	4	6,496			2	887	4	5,682		
Salvador			8	5,756	4	4,452	3	5,938	1	4,407			2	1,999	2	4,263
Mexico	301	108,690	185	115,441	75	78,639	26	40,057	29	85,731	157	92,942	52	79,384	14	50,971
Miquelon	1	260														
Newfoundland	1	150	2	1,319							1	455	2	2,604		
Barbados							1	1,475								
Jamaica	33	12,467	11	6,527	6	6,065			1	2,500	35	10,612				
Trinidad and Tobago					1	994	1	1,531			1	459				
Other British West Indies	12	4,139	3	2,183	6	6,560					4	961	2	2,303	1	3,295
Cuba	271	93,431	81	55,140	41	42,141	17	25,947	16	46,646	155	54,526	30	40,790	7	14,774
Dominican Republic	58	26,774	12	8,638	26	27,813	4	5,954	5	13,000	22	11,184	20	10,370	2	3,882
Dutch West Indies	2	884	9	6,579	3	3,433					6	2,702				
French West Indies																
Haiti	10	3,720	3	2,198	6	5,475	1	1,495			9	2,730	3	3,922		
Virgin Islands	2	838														
Argentina	719	341,903	43	29,550	490	501,263	73	114,493	23	60,014	15	17,048	38	67,157	18	60,382
Bolivia					8	8,478	3	4,964	3	7,500						
Brazil	536	193,130	249	179,509	98	99,041	29	45,979	20	54,089	171	62,726	17	18,200	8	35,495
Chile	6	2,873	65	49,445	19	18,751	6	9,765	2	5,000	8	11,892	5	7,620		
Colombia	24	9,214	27	22,461	44	46,447	27	40,123	12	39,524	34	28,687	58	67,512	12	48,224
Ecuador																
British Guiana			1	621												
Dutch Guiana																
Paraguay											10	3,191				
Peru	67	23,665	16	11,062	9	10,441	2	3,269	2	5,000			14	19,011		
Uruguay	185	56,987	68	50,101	31	32,703	8	13,942	4	8,520	160	44,663	13	20,984	1	1,800
Venezuela	25	10,612	64	49,989	149	154,965	9	14,532	12	32,678	8	6,286	26	43,584		
Aden																
British India	2	906	115	85,801	42	46,075	6	9,607			89	58,124	7	7,545		
Ceylon			10	7,400	13	14,449	4	6,086					7	10,343		
Straits Settlements	60	33,280	24	18,114	20	21,615	2	2,766	1	2,500	2	1,206	4	4,567	1	2,040
China	77	27,074	18	13,004	32	33,465	1	1,696	1	4,000	33	19,197	32	33,932		
Java and Madura	57	30,115	70	50,139	23	23,133	12	18,442	5	12,500					1	2,268
Other Dutch East Indies	10	5,550	23	17,420	21	21,564	16	26,782	1	2,500	2	3,580				
Hejaz, Arabia and Iraq			16	10,835	1	960										
Hongkong	3	1,665			3	2,690										
Japan	2	300	41	28,359	54	56,041	8	13,127	1	3,254					2	17,168
Kwangtung	34	11,420	5	3,124												
Palestine and Syria	14	5,052	34	24,608	19	19,299	5	7,452			18	11,319	27	31,039		
Persia																
Philippine Islands	160	72,478	63	49,376	27	28,573	8	13,996	14	47,610	82	26,680	8	11,847	6	15,656
Siam	2	1,017	6	3,866	6	7,140										
Turkey	6	2,124	5	3,104									1	805		
Australia	2,245	923,488	1,216	844,266	1,423	1,625,133	138	212,967	100	252,589	1,528	703,620	204	205,476	67	211,054
New Zealand	158	68,262	269	194,357	229	247,331	19	28,980	18	46,764	17	14,872	58	63,905		
British Oceania			10	6,448	2	1,749										
French Oceania																
Other Oceania																
Belgian Congo																
British West Africa			5	4,277	1	1,010					34	27,796	14	13,754		
British South Africa	362	153,468	386	273,173	445	475,548	12	18,752	2	4,857	14	8,111	27	23,453	3	9,269
British East Africa	6	3,270	25	20,878	25	27,985	1	1,888			30	14,818	6	5,668		
Canary Islands			13	9,937	4	4,185							2	2,144	1	1,850
Egypt			35	23,937	12	13,311	1	2,099	1	3,361	40	8,960				
Algeria & Tunis																
Other French Africa																
Liberia																
Madagascar	4	1,416									62	20,956	1	1,113		
Morocco					2	2,114							1	1,235		
Portuguese East Africa			2	1,353	15	17,850					4	2,595				
Other Portuguese Africa			2	1,471							11	9,159	2	2,534		
Spanish Africa																
Total	6,432	$2,617,411	4,296	$3,049,505	4,368	$4,717,920	746	$1,171,675	506	$1,344,504	2,963	$1,387,723	914	$1,090,824	170	$555,783

for October, 1926 | Canadian Exports

ELECTRIC VEHICLES		PARTS	TIRES						PASSENGER CARS						TRUCKS		PARTS	COUNTRIES
			Casings		Inners		Solids		Up to $500		$500 to $1000		Over $1000					
No.	Value	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value	
		$975	1	$73			2	$41										Austria
		1,119	67	822	51	$107												Azores and Madeira Islands
		44,663	560	12,495	50	81					4	$3,705	3	$3,467			$10,680	Belgium
		65	4	109					2	$679								Bulgaria
		1,983	1,277	25,493	80	290	242	$12,795										Czecho Slovakia
		41,339	2,576	32,763	1,649	3,112	51	1,449			17	16,054	6	8,521			5,154	Denmark
		252	31	535	31	84	2	74										Esthonia
		23,170	252	4,181	199	638					5	3,564					396	Finland
		77,528	1,706	21,855	309	900					3	2,113						France
		61,812	11,409	165,966	7,441	17,925					1	947	15	20,766			1,383	Germany
		247	6	107	12	34												Gibraltar
		5,807	274	6,146														Greece
		834	33	482	35	100												Hungary
		382	333	3,520														Iceland and Faroe Islands
		19,329	874	16,516	860	2,343			3	1,268	1	601						Italy
		357																Latvia
		49																Lithuania
		1,102							20	7,551	3	2,108						Malta, Gozo and Cyprus Isl.
		56,566	2,123	45,652	1,149	3,508					12	6,588					360	Netherlands
		22,111	1,012	21,200	788	1,838	32	1,408	3	1,482	14	9,206	2	2,332			157	Norway
		187	437	6,389	172	364												Poland and Danzig
		8,665	686	9,058	274	529												Portugal
		2,519	285	4,386	180	463			51	21,358	2	1,371	4	5,151				Rumania
		31,702	2,146	28,032	4,533	6,981	121	2,643										Spain
		80,720	2,740	51,322	2,186	5,170	22	688			15	10,214	3	4,358			11	Sweden
		11,336	1,092	14,726	1,027	2,645	70	4,805										Switzerland
		1,096																Turkey
		422,878	7,707	128,050	6,340	14,731	1,026	27,584	72	32,483	196	158,648	57	70,220			17,209	United Kingdom
		59,668	12	274	12	24											672	Irish Free State
		894	125	1,396					5	2,113	4	3,073	1	1,486			42	Yugoslavia
									14	2,210	4	3,400	1	1,300			39,601	United States
		630	15	302	12	42												British Honduras
3	$4,515	2,347,446	511	17,957	988	3,379	124	4,846										Canada
		4,611	354	8,291	402	1,231	2	92									3	Costa Rica
1	500	18,229	248	5,836	243	877	10	350			2	1,370			10	3,932	18	Guatemala
		4,227	59	1,440	82	175	4	203					1	1,212				Honduras
		952	10	162	49	128					1	944	1	1,181			20	Nicaragua
		16,842	1,020	15,570	239	622	84	1,487			4	3,706	3	3,773			112	Panama
		9,114	291	6,428	91	368	7	216										Salvador
24	20,518	140,194	5,906	70,793	3,651	10,004	229	7,768			6	5,340						Mexico
																	23	Miquelon
		747	35	456	49	87											282	Newfoundland
		328	65	988	31	79	30	1,229	6	2,104	1	905						Barbados
		20,030	25	341	6	11	39	754	23	9,328	3	2,779			13	5,008	65	Jamaica
		1,623	112	2,318	154	507	4	223	12	4,855	15	9,598			4	1,577	49	Trinidad and Tobago
		8,674	75	839	73	222	68	1,645	2	701	1	603						Other British West Indies
		85,010	12,242	140,646	19,492	29,014	497	16,475					8	9,849			165	Cuba
		24,918	688	11,307	783	1,653	58	2,017					2	2,311			1,203	Dominican Republic
		2,842	184	2,847	442	1,051			5	2,177	2	1,854			4	1,573		Dutch West Indies
		296			6	22												French West Indies
		7,909	396	7,759	429	1,132									8	3,146	14	Haiti
		214	40	427	125	188												Virgin Islands
		241,365	8,882	125,786	3,915	8,113	882	24,147	360	177,666	106	80,380	59	71,245			107,561	Argentina
		4,655	23	945	15	85												Bolivia
		278,211	4,304	51,736	2,303	4,432	162	4,359	103	50,552	109	92,625	21	22,970			36,697	Brazil
		76,066	782	21,015	240	848	42	2,677	30	12,680	3	2,483	1	1,212	16	6,082	41	Chile
		62,928	1,703	39,329	1,707	6,316	16	749	17	7,293	3	2,779	5	7,046	38	15,278	71	Colombia
		1,072	102	2,000	117	402	16	489									67	Ecuador
		432	36	311	30	49			3	1,208	1	506					3	British Guiana
		273	16	116	36	51												Dutch Guiana
		2,250	58	618	130	281												Paraguay
		29,673	1,435	31,595	1,235	4,302	14	379	3	1,213			2	2,311	3	1,197	43	Peru
		37,286	617	9,557	242	425	36	1,452	20	9,880	39	36,043					257	Uruguay
		41,050	1,549	34,809	1,856	5,436	6	340	64	25,872	5	4,221	2	2,311	90	35,180	60	Venezuela
		55	36	323	36	56									5	1,473		Aden
		66,880	2,885	37,354	1,431	2,796	122	3,928	528	200,752	91	64,261	2	2,604	517	174,037	32,670	British India
		9,397	614	8,590	242	537	46	1,926	36	16,233	6	4,620			24	7,468	1,267	Ceylon
		77,155	2,143	24,223	237	693	348	7,432	122	41,204	16	8,290	1	1,185	149	55,921	22,511	Straits Settlements
		31,201	704	10,449	722	1,696	12	428	30	11,951	62	52,013	12	17,489	4	1,697	13	China
		44,918	4,654	67,565	2,536	5,195	115	4,375	277	113,824	37	33,092	5	7,177	195	72,448	34,920	Java and Madura
		11,571	357	7,800	36	89												Other Dutch East Indies
		5,091	460	4,262	400	714	32	1,028	12	5,066					15	5,401		Hejaz, Arabia and Iraq
		2,537	61	1,113	17	51					1	600						Hongkong
		128,835	4,598	45,542	4,458	10,962	739	12,506	53	23,439	15	10,481	21	26,509	14	5,469	5,558	Japan
		3,360	16	415	10	21												Kwangtung
		4,834	124	2,603	100	451											61	Palestine and Syria
		2,005	112	850	230	363												Persia
		63,726	2,882	31,749	2,649	10,504	193	6,672										Philippine Islands
		5,895	12	267	12	40			4	1,682	1	905	1	1,093	88	29,043	3,991	Siam
		1,411	110	1,148	145	366	10	326									4	Turkey
		350,776	2,881	57,376	1,673	5,626	615	33,589	1,555	464,085	75	39,520	1	1,377	501	133,856	34,096	Australia
		118,591	666	12,908	486	1,452	161	6,279	440	145,187	212	137,906	1	1,091	89	33,919	22,589	New Zealand
		1,014	18	360	34	89					2	1,178			1	284		British Oceania
		1,187	9	300	8	35	2	64										French Oceania
											1	967	2	2,472	11	4,024	3	Other Oceania
		377							4	1,976					2	786		Belgian Congo
		16,274	517	15,555	609	2,432			21	8,400	7	4,232			29	9,639	1,431	British West Africa
		101,054	1,048	19,496	492	1,563	80	2,931	23	8,320	6	5,680	2	2,369	160	51,911	8,926	British South Africa
		17,484	327	7,564	213	510			50	18,235	53	37,553			19	7,459	11,698	British East Africa
		8,502	435	7,550	248	688	56	2,606	5	2,141	3	2,862			13	4,461	70	Canary Islands
		12,177	551	8,450	108	346	10	328			15	11,714	10	12,417	58	22,806	14	Egypt
		150	50	518	4	10												Algeria and Tunis
									3	1,482	2	1,234					790	Other French Africa
															3	930		Liberia
		5,801																Madagascar
		3,330							2	988	1	549						Morocco
		4,941																Portuguese East Africa
		3,991	2	19					13	4,885					24	9,039	10	Other Portuguese Africa
		2,045																Spanish Africa
28	$25,533	$5,556,017	105,823	$1,588,421	83,687	$190,684	6,439	$207,822	3,996	$1,444,523	1,188	$885,385	255	$318,835	2,107	$705,044	$394,041	Total

AUTOMOTIVE NEWS SECTION INDUSTRIES

Philadelphia, Pennsylvania

Thursday, December 9, 1926

Production Totals Reduced by Drop in Ford Operations

PHILADELPHIA, Dec. 9—November production of cars and trucks is estimated at about 245,000 units, against 349,408 in October and 377,483 in November of 1925. The total for the year to date is thus brought to approximately 4,272,000 vehicles, against 4,336,271 for the entire year 1925. The November rate of output was the lowest of the year, and December production will probably be under November.

While the figures are definite evidence of general curtailment, the drop last month as compared with the rate of a year ago is largely attributable to lower operations by Ford, who was still in active production then on new models. Other companies in November were less than 8 per cent under their totals for the same month of 1925.

Dealers' stocks are now fairly heavy, and although this condition may be justified, at least in part, by factors that have arisen this year, it is plainly indicated that a considerable rise in demand for cars will be necessary before the factories begin to step up output. It is confidently felt that with the opening of the national automobile shows in January that stimulus will be given to buying.

Some dealers are reporting that a gratifying number of orders are being placed for later deliveries of cars.

For the first nine months of 1926, retail sales were 16 per cent over the same period of 1925. The gains and losses for the individual companies varied greatly, but the assumption that all of the increase went to the few big producers is not a fact. Three or four comparatively small companies were among the leaders in sales gains, and two or three large ones were well under their last year's figures.

Three Bills Propose Excise Tax Removal

WASHINGTON, Dec. 8—The initial move for final and complete repeal of the remaining 3 per cent excise taxes on automobiles was made this week with the introduction of three bills in Congress, providing for such repeal. The bills were introduced by Representatives Gallivan (Dem.) of Boston; Hudson (Rep.) of East Lansing, Mich., and Appleby (Rep.) of Asbury Park, N. J. The bills were referred to the House Ways and Means Committee for consideration.

Another move was gotten under way by the Democrats, as a party offensive, for a general tax reduction, which carried with it the repeal of the automobile taxes, now netting the Government $75,000,000 annually.

W. R. Tracy Succeeds Matheson at Oakland

PONTIAC, Dec. 8—C. W. Matheson has resigned as director of sales of Oakland Motor Car Co. and W. R. Tracy, who has been assistant director, has been named to succeed him.

The resignation of Mr. Matheson comes after a connection of about three years with Oakland in which the sales of this division of General Motors have been brought to record levels. Previous to joining Oakland he served briefly as an assistant to A. P. Sloan, Jr., and before that was vice-president in charge of sales of Dodge Brothers, Inc., for many years before the present ownership.

Mr. Tracy has been high in the sales department of Oakland for many years and is credited with having had much to do in bringing about its successes in recent years.

Bassick Group Buys Service Motors, Inc.

DETROIT, Dec. 8—The capital stock of Service Motors, Inc., has been purchased by E. W. Bassick and associates. The company will be combined with Commerce Motor Truck Co. into a new corporation with headquarters at Wabash, Ind. Officers and directors of the new company are to be announced at an early date.

G. L. Gillam, president of Service Motors, will be an officer of the new company and will have active charge of the business. M. A. Holmes, who has been sales manager of Commerce, will direct sales of the new company. W. R. Bassick, president of Commerce, will be an officer and director.

Nash to Aid Army Buying

WASHINGTON, Dec. 8—C. W. Nash, president of Nash Motors Co., has been selected by Secretary of War Davis as one of the 10 leading business men of the country to advise the army administration in its annual purchases.

SPANISH BACKGROUND FOR NEW YORK SHOW

NEW YORK, Dec. 7—Decorative effects of the New York automobile show will have a South American background, the selection by S. A. Miles, manager, being determined in part as an acknowledgment of the warm welcome given representatives of the National Automobile Chamber of Commerce by South American countries on a recent visit.

As a central piece at the entrance of Grand Central Palace will be a painting depicting the friendship of the two Americas. On each of the four floors will be backgrounds showing picturesque scenes in South American countries.

The Chicago show will have a Persian setting.

Falcon-Knight Name of New Detroit Car

DETROIT, Dec. 8—The Detroit company, headed by John A. Nichols, Jr., which will build the new Knight-engined car in the $1000 price class, will be known as Falcon Motors Corp., according to announcement this week by Mr. Nichols. The car will be known as the Falcon-Knight and will be built in a full line of body types. Executive and sales offices will be maintained in the Majestic Building, here.

The company is actively engaged in organizing a strong dealer body in anticipation of deliveries early in the spring. No attempt will be made to show models at the national shows but the cars will be ready for exhibition by dealers at some of the later spring shows in local territories. It is expected to maintain hotel headquarters during the national shows in New York and Chicago to acquaint dealers with executives of the new company.

M. A. M. A. Studies Outlets

NEW YORK, Dec. 9—A survey of wholesale outlets of accessory manufacturers has been undertaken by the Motor and Accessory Manufacturers Association. This research, which is expected to be completed early in the new year, will be the eleventh study of distribution practices made since last January by the Sales Development Department of the M. & A. M. A. It will show the cities in which accessory manufacturers have established wholesale distribution and will indicate the extent of this distribution in each city.

Rubber Pool Result of N.A.C.C. Proposal

Advanced Plan to Protect Prices Against Speculation —Raskob to Aid

NEW YORK, Dec. 8—Formation of a pool of automotive and rubber interests here, to attempt stabilization of the price of crude rubber, was the outgrowth of a project somewhat smaller in scope originally conceived by the National Automobile Chamber of Commerce nearly a year ago when rubber prices were abnormally high.

Although no official announcement of the personnel has been made, several automotive executives confirmed reports that John J. Raskob, vice-president of General Motors Corp., will head the motor group, and that this section will include besides General Motors, the Nash, Hudson, Packard, Dodge, Studebaker and Chrysler companies and Mack Trucks.

Charles B. Seger, president of the U. S. Rubber Co., heads the entire combination, while L. T. Tompkins, vice-president of the General Rubber Co., subsidiary of U. S. Rubber, probably will have charge of actual purchases.

The first objective of the present group, which supersedes and includes the previous N.A.C.C. "American Motor Rubber Corp.," will be to purchase a supply of spot crude, to be laid down in New York, which will function as a sort of shock absorber to neutralize any tendencies toward a runaway market in either direction.

Executives of the interests involved indicated today that the group will be formally incorporated and has already arranged a large credit with the National City Bank and the International Acceptance Co., with which a stock of crude will be accumulated in New York, the purchases to be made when the market is favorable. No indications of any purchases yet having been made are apparent on the market, according to F. E. Henderson, president of the Rubber Exchange of New York.

"At present efforts will be devoted exclusively to maintaining a steady price, possibly around present levels," one representative automotive executive asserted. "The obvious purpose of this is to enable tire manufacturers to plan production and make future contracts without fear of sudden declines in the basic price."

Producers' Pool Proposed

WASHINGTON, Dec. 7—The formation of a rubber producers' pool, "to counteract an impending American consumers' rubber pool," is being agitated in England, according to cable received by the U. S. Department of Commerce.

Combined buying should be met with combined selling and a producers' pool strong enough to withhold supplies from a falling market should be the answer to the American consumers' pool, it is argued. The American consumers pool, it is declared, "may be taken as an indication that the American consumer is ready to assist the Stevenson plan to achieve its original object, namely stabilization of the price of rubber on a basis fair to producers and consumers alike."

Will Divide Control Declares Firestone

AKRON, Dec. 8—Officials of Akron tire companies regard the $40,000,000 rubber pool as the most important cooperative step ever undertaken in the automotive industry.

Harvey S. Firestone, president of the Firestone Tire & Rubber Co., was one of the first to indorse the cooperative plan.

"The ultimate effect will be division of rubber price control between growers and manufacturers," he said. "A 'cushion' of 50,000 tons of rubber in New York will make British markets, with a reserve now approaching 40,000 tons, take notice.

"Stabilization of the rubber market in this manner will act as a safeguard to the American consumer by preventing an unwarranted skyrocketing of prices in times of stress. I am strongly in favor of it."

Reduced inventories for the tire companies are predicted, which will enable them to carry on business with smaller working capital than they have heretofore required, and at smaller cost. Organized buying on the scale planned will overcome to some extent the evils of organized restriction of a commodity which is vital to one of this country's largest industries.

New Executives Named by Rickenbacker Head

DETROIT, Dec. 9—Changes in the personnel of Rickenbacker Motor Co. announced by C. M. Tichenor, vice-president and general manager, show J. L. Connell named comptroller; H. L. Winter, sales manager of the eastern and central divisions; A. W. Crossman, sales manager of the western division; W. A. Matthews, assistant sales manager; W. A. Macks, purchasing agent, and E. R. Evans continuing as chief engineer.

Gilbin Joins Chevrolet

DETROIT, Dec. 9—A. W. L. Gilbin has been named assistant general sales manager of Chevrolet Motor Co. by R. H. Grant, general sales manager, and will assume immediate charge of the Chicago and Cincinnati regions. C. E. Dawson will have the Flint and Tarrytown regions, and H. J. Klinger, the St. Louis and Oakland, Cal., regions. Mr. Gilbin recently was an assistant sales manager of Ford Motor Co.

Business in Brief

Written exclusively for* AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Dec. 9—Business reports continue to reflect irregularity in current developments. In general, the volume of wholesale trade appears to have decreased somewhat last week, while retail trade expanded. Cold weather stimulated sales in some lines, while holiday buying also began to be a factor of some importance. Both stock and commodity prices moved uncertainly, with a general tendency toward slightly higher levels.

FREIGHT CAR LOADINGS

Further seasonal recession occurred in the volume of railway freight during the week ended Nov. 20, when car loadings numbered 1,078,812, as compared with 1,112,886 in the preceding week and 1,057,923 in the corresponding period last year. Loadings for the year to date total 48,586,821 cars, which compares with 46,600,618 cars a year ago.

PETROLEUM OUTPUT

Crude petroleum production increased again during the week ended Nov. 27, with an average daily output of 2,391,250 barrels, as against 2,370,450 barrels a week earlier and 2,045,250 barrels in the similar period of 1925. Numerous reductions in gasoline prices took place last week.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended Dec. 1 (a holiday week) were 4.7 per cent smaller than the total a week earlier and 2 per cent below that of a year ago.

FISHER'S INDEX

Fisher's index of wholesale commodity prices stood at 149.5 last week, as against 149.4 a week earlier and 153.5 four weeks earlier.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve banks increased $51,400,000 during the week ended Dec. 1, with gains of $17,900,000 in discounts, $27,500,000 in open market purchases and $6,000,000 in holdings of Government securities. Note circulation decreased $2,400,000 and reserves $1,800,000, while deposits rose $62,000,000. The reserve ratio declined from 73.3 to 72.2 per cent.

During the same period, loans of reporting member banks increased $50,000,000, a gain of $56,000,000 in loans secured by stocks and bonds, being only slightly offset by small declines in other classes of loans. Investments decreased $2,000,000, while borrowings from the Federal Reserve banks rose $14,000,000 and net demand deposits $150,000,000. Loans to brokers and dealers, secured by stocks and bonds, made by reporting member banks in New York City increased $38,000,000.

Churchill Becomes Buick Sales Chief

Was Director of Sales Under Strong Since 1921—Joined Winton in 1904

FLINT, Dec. 6—The appointment of C. W. Churchill, director of sales of Buick Motor Co., to the position of general sales manager, was made known today. Mr. Churchill succeeds E. T. Strong, who several days ago was elected president and general manager of the company, succeeding the late H. H. Bassett.

"The vacancy in the sales manager's office created by my recent appointment makes a nominal readjustment necessary," declares a statement issued by Mr. Strong. "C. W. Churchill becomes general sales manager by virtue of his thorough familiarity with the office gained through his work as director of sales during the past five years. Mr. Churchill's appointment will undoubtedly be most gratifying since it assures Buick of the continued pleasant relations this company has enjoyed in the past, both with the public and within the organization."

Buick's new sales manager was born in Detroit in 1880. He is a widely known executive through his association with the automobile business since 1904. After leaving school he entered the employ of the D. M. Ferry Co., seed merchant, as a traveler and was with that concern for three years. He went to Cleveland in February, 1904, to become assistant manager of sales for the Cleveland branch of the Winton company. In the spring of 1906 he was made branch manager for New York City.

He was promoted to sales manager of the Winton company in 1908, with headquarters in Cleveland, a position he held until 1915 when he was named general manager. In 1921 Mr. Churchill came to Flint as director of sales for Buick.

Detroit Retail Below 1925

DETROIT, Dec. 4—Passenger car sales in Wayne county for November totaled 2913, bringing sales for the first 11 months of 1926 to 74,796 compared with 76,017 for the first 11 months of 1925. Commercial car sales for the month totaled 525, bringing commercial car sales to 8517 compared with 6907 during the 1925 period.

G.M.A.C. Opens in Flint

FLINT, Dec. 6—A branch office has been opened in Flint by the General Motors Acceptance Corp., to take care of the increasing General Motors business in this territory. Headquarters have been established in the Industrial Bank Building, under the supervision of F. W. Brandt, formerly of Detroit.

C. W. Churchill

Who succeeds E. T. Strong as sales manager of Buick Motor Co.

Lincoln Now Using Four-Wheel Brakes

DETROIT, Dec. 6—Bendix four-wheel internal brakes of the internal shoe self-energizing type have been adopted as standard equipment on all Lincoln cars. Coincident with this change, prices on all models have been increased $200. The new cars are now in the hands of large city dealers throughout the country.

With the adoption of four-wheel brakes, changes were necessary in the previous braking system. On the two-wheel brake models the service brake system was of the external type while the hand brake was of the internal type, both systems operating on drums on the rear wheels. With the new models the emergency brake actuates the external brakes previously operated by the foot pedal, whereas the internal type brake of the earlier emergency system now forms part of the service four-wheel brake system.

In addition, Lincoln cars are now equipped with Parabeam headlights, centrifugal air cleaner and a radiator cap ornament representing a running dog.

Burgess Named to Head Chicago N.S.P.A. Division

CHICAGO, Dec. 6—A Chicago division of the National Standard Parts Association has been formed with C. M. Burgess of Burgess-Norton Mfg. Co., president. This is the first step in a plan to organize divisions of the national association in all sections so that the interests of members may be promoted locally as well as nationally.

The Chicago division will meet on the second Tuesday of each month at the Hotel Sherman.

Boyd Tells Refiners Fuel Research Need

Says General Use of High Compression Ratios Will Follow Antiknock Fuels

TULSA, OKLA., Dec. 9—The urgent need for creating suitable research agencies for the development of substitute motor fuels was pointed out by T. A. Boyd of General Motors Research Corp. in a paper delivered at the annual meeting of the American Petroleum Institute here today.

"We know there is a wealth of energy in the world," said Mr. Boyd. "Our problem is not one of the supply of energy but rather one of converting energy that already surrounds us everywhere into the form that will serve us best."

Drawing a simile with the fate of the thirsty sailors in the "Ancient Mariner," Mr. Boyd said that unless precautions are taken for development of our future motor supply we may be made to suffer from the same curse that caused their parched condition, which was "ignorance of the simple process by which the salt water of the sea that surrounded them on every side could be purified and made potable."

Mr. Boyd conceded that much constructive work is being done in improvement of method in recovery of crude petroleum, betterment in cracking process and improved design of gasoline engines, and predicted the general use of higher compression ratios once the widespread distribution of antiknock gasolines is attained.

Mr. Boyd said the motor fuel of tomorrow must have high heating value, suitable volatility and freedom from tendency to knock. He stressed particularly the necessity of high volatility because the introduction of heat with the fuel air mixture is undersirable, both because it seriously reduces the volumetric efficiency of the engine and because it has a large influence in inducing knocking. He advocated that a universal standard of volatility be established and the adherence to this definite standard be observed commercially. He predicted that engine compression ratios may reach 6.5:1, or even 7.0:1 when standard antiknock fuels are universally obtainable.

Ford Starts Coast Unit

LOS ANGELES, Dec. 6—Work has started on the Ford Motor Co. new assembling and manufacturing plant on the harbor between Los Angeles and Long Beach. The plans for the project contemplate construction of wharfage facilities along 560 ft. of the ocean side of the property. This will make it possible to load the finished Ford products directly from the plant into ships bound for other ports. Preliminaries also have been started for the new San Francisco plant.

Government Aviation to Need $82,500,000

Will Spend $20,600,000 on New Planes and Engines—Plan Two Airships

WASHINGTON, Dec. 8—Congress will be asked to appropriate a total of $82,500,000 during the fiscal year of 1928 for the furtherance of aviation in the Army, Navy and other branches of the Government, according to President Coolidge's message to Congress this week transmitting the budget for next year.

Of this sum $20,600,000 is to be expended for new engines and airplanes; $796,000 is asked for the Department of Commerce, to promote civil aviation; $2,350,000 is asked for the Post Office Department for its air mail; $523,000 is asked for the National Advisory Committee for Aeronautics, and $8,000,000 for the construction of two rigid airships.

Discussing the aviation industry, the President pointed out that "the proper development of the aeronautical industry is essential both to our national defense and commercial aviation. The program which the Congress has prescribed will assure the industry continuing Federal business and an increase from other sources should accrue to the industry from the legislation for the encouragement of commercial aviation and from the policy which we are following of making contract for operation by private interests."

Every thing possible should be done to encourage the aviation industry as an adjunct of national defense in times of war, the President pointed out, expressing a belief that this can best be done in peace times by the Government encouraging the industry by purchases and by refraining from competing with private industry in engine and plane manufacturing.

Moon-Diana Exports Gain

ST. LOUIS, Dec. 7—Export sales of Moon and Diana cars in the third quarter were 65 per cent in excess of the same period in 1925 according to E. H. Serrano, director of exports of Moon Motor Car Co. For the nine months to Sept. 30, export sales show a 25 per cent increase over the 1925 nine months' period. Seven distributors in the export field were added in the third quarter, bringing the total to 60.

Authorizes Coast Airport

OAKLAND, CAL., Dec. 6—The Oakland City Council has adopted a resolution authorizing the purchase of a municipal airport of 692 acres on Bay Fram Island, on the shore of San Francisco Bay, nearly opposite the Golden Gate entrance to that harbor. Total cost of the land is fixed at $624,500.

INSURANCE SURVEY LIFTS FLYING BAN

HARTFORD, CONN., Dec. 6—The Travelers Insurance Co. has removed restrictions regarding the use of aircraft for transportation from about 80 per cent of its policies. Such use of aircraft, however, will be limited to the use of licensed planes operated on a regular passenger route by licensed pilots between certified airports. No additional premium will be charged to cover hazards for this method of transportation. This decision has been reached as a result of an extensive survey conducted by this company, the result of which showed that there was but little greater risk in flying under such conditions than the risks which normally beset pedestrians and users of automobiles.

Chandler-Cleveland Adds Seven-Passenger Sedan

CLEVELAND, Dec. 6—Chandler-Cleveland Motors Corp. has added a seven-passenger sedan on the big six chassis known as the seven-passenger sedan de luxe. The car is finished in a combination of Ardsley green and deep, lustrous black lacquer. A black bead emphasizes the low body lines. Without extra charge the buyer may select a finish in dark blue and black lacquer. Upholstery is in blue-gray mohair over deeply cushioned, buttoned and overstuffed seats. There are arm rests, toggle grips, reading lights, silk robe rail, upholstered foot rest, smoking set, vanity case and other conveniences. The interior finish has Circassian door panels inlaid to harmonize with the instrument board.

Stearns Sees 1927 Gain

CLEVELAND, Dec. 6—The F. B. Stearns Co. will enter 1927 with quick assets six times greater than its liabilities according to a statement by H. J. Leonard, president. Sales in the past several months have shown satisfactory increases and the company is looking for 1927 to set new production and sales records. The special salon just held by company dealers has brought in many orders for delivery at Christmas and in January.

Salon Sales $1,500,000

NEW YORK, Dec. 6—Volume of orders for custom-built bodies and car chassis at the salon will approximate $1,500,000 according to exhibitors, an increase of 50 per cent over business at the 1925 showing. About 60 per cent of the total business represented custom body orders. As result of the success of the New York salon there is reported an increased demand for space at the Chicago and Los Angeles exhibits.

Coolidge Opposes Change in Tax Now

Opening Message Holds for Temporary Relief Rather Than Permanent Action

WASHINGTON, Dec. 7—Declaring that while he would favor tax reduction as soon as possible, President Coolidge in his message to Congress, on the opening of its sixty-ninth session today, said he did not favor any change at the present time of automotive excise taxes.

He pointed out that of the so-called war excise taxes there now remain on the statute books the automobile and admission taxes. These should remain in force at the present time, the President declared. Discussing the general tax reduction program, he said:

"At the end of the fiscal year there will be a surplus in the Treasury of $383,000,000. Unless otherwise ordered such surplus is used for the retirement of the war debt. While I favor a speedy reduction of the debt as already required by law, there is no reason why a balanced portion of surplus revenue should not be applied to a reduction of taxation. . . . Millions of individuals and corporations are making a direct contribution to the national treasury which runs from 1½ to 25 per cent of their income, besides a number of special requirements, like automobiles and admission taxes. . . .

"If it were feasible, I should welcome permanent tax reduction at this time. This is not possible now. However, it is possible to grant some real relief by a simple measure making reductions in the payments which accrue on March 15, and June 15, 1927. . . . As I do not think any change in the special taxes, such as automobiles and admission, or any permanent reduction is practical, I therefore urge both parties of the House ways and means committee to agree on a bill granting the temporary relief which I have indicated, etc."

Discussing ways and means of aiding the farmer, the President pointed out that one of the ways in which this is being done is by the expenditure of Federal funds in improving highways. He strongly urged that there be a consistent continuation of this program.

Consolidation of railroads should be brought about as rapidly as possible, the chief executive declared, and urged the passage of such legislation as might further facilitate consolidation as soon as possible.

Ohio Rubber Builds

CLEVELAND, Dec. 6—The Ohio Rubber Co., located at Willoughby, has awarded contracts for a manufacturing and storage addition to its plant to cost $60,000, and for a factory unit to cost $100,000. The new additions will double the capacity, increasing output from 8000 sets of running boards daily to 16,000.

Men of the Industry and What They Are Doing

Federal Names Hodgkins to Direct Sales Work

R. T. Hodgkins has been appointed director of sales of Federal Motor Truck Co., according to announcement by M. L. Pulcher, president. The appointment has been made, according to Mr. Pulcher, because of the steadily increasing volume of Federal business, with an ambitious program of expansion adopted for the future.

Mr. Hodgkins has been connected with the industry in sales capacities for a long period. For the past two years he has been general sales manager of Rickenbacker Motor Co., succeeding A. J. Banta. Previously he had been sales manager of Rollin Motor Car Co. and had been identified with Rollin White in other enterprises. Mr. Hodgkins also was sales manager of the Studebaker Corp. of America for a number of years.

Franklin Promotes Taylor

A. M. Taylor, for four years connected with the advertising department of the H. H. Franklin Mfg. Co., has been appointed sales promotion manager of the company. The post was created Dec. 1. Mr. Taylor in his new duties will be associated with the merchandising department under John W. Lee, Jr., manager of that division of the executive offices. Mr. Taylor was at one time advertising manager of Velie. No action has been taken in naming a successor to S. E. Ackerman as sales manager.

F. C. Chandler, Jr., Returns

F. C. Chandler, Jr., assistant to the president of the Chandler-Cleveland Motors Corp., has returned from Europe where he investigated dealer conditions. He says there is little propaganda to encourage the buying of home products and that American cars are popular.

German Delegates Named

Dr. Allmers, president, and Dr. Scholz, general manager, of the Reichsverband der Automobilindustrie, will represent Germany's automotive industry at the Third World Motor Transport Congress at the Hotel Roosevelt, Jan. 10-11.

Kilpatrick Changes Work

L. W. Kilpatrick has resigned as sales manager of the W. H. Thomas Mfg. Co., Spencer, Iowa, to take over sales of Thomas products in the factory territory.

Davis Joins G. M. Truck

J. J. Davis has been appointed general manager of the General Motors Truck Co. for northern California, resigning as manager of the Reo Motor Car Co. branch in Oakland.

LANE GETS EMBLEM OF 10-YEAR SERVICE

Gold emblems to signalize their 10-year service with United Motors Service, were presented at the tenth anniversary meeting of United Motors to Ralph S. Lane, general manager; J. L. Elwood, his assistant, and L. C. Borel of the St. Louis branch. The presentations were made by F. A. Oberheu, general sales manager.

Addressing the meeting, J. D. Mooney, president of General Motors Export Corp., declared the foreign expansion of American automobile sales is predicated entirely upon the extension of adequate service facilities.

Middleton Joins G. M. C.

R. T. Middleton has been appointed to the New York staff of General Motors Corp. as special assignment man. He went to France in May, 1917, as a member of General Pershing's driving staff and afterwards was placed in charge of motor transportation at general headquarters. Later he was transferred to the aviation service and was discharged with the rank of captain in 1919. Returning to civilian life he became sales manager for Lexington, and later joined the Republic Motor Truck Co. as manager of eastern territory.

Harmon Moved to St. Louis

Frank J. Harmon, branch manager for International Harvester Co., has been transferred to St. Louis where he will become head of the newly established motor truck division in St. Louis. The motor truck department was recently separated from the general agency there and is occupying its own newly completed building to handle the growing business in the St. Louis district. M. F. McCarthy, lately with the Dubuque agency of the International, succeeds Mr. Harmon in Aurora as branch manager.

Hough Now Sales Head

J. K. Hough, who has been with the Goodyear Tire & Rubber Co. of California since its organization in 1919, has been appointed sales manager. Previous to coming to California Mr. Hough held executive sales positions with the Goodyear company at Akron.

Suttles Succeeds Balser

J. B. Suttles, former St. Louis salesman for the White Co., has been appointed district manager at Indianapolis under the direction of Vice-President George F. Russell. Mr. Suttles takes the place of F. W. Balser who goes to Chicago.

Cadillac Consolidates Service Under Dreystadt

Cadillac Motor Car Co. will unite the technical and parts departments into one service department under the direction of Nicholas Dreystadt, recently appointed general service manager. The service department will be enlarged by increasing the personnel. The expansion is designed to bring closer cooperation with the field service organization.

Under the new arrangement the department will be divided into three divisions. Ernest C. Garland, formerly technical manager will become head of the service engineering department; the field division will be directed by T. W. Holloway as field supervisor, and the parts division will be headed by W. M. Warner, formerly head of the parts department.

Grant Meets Southern Dealers

R. H. Grant, vice-president and general sales manager of Chevrolet Motor Co., was guest of honor and principal speaker at a meeting of Chevrolet dealers of Georgia and Alabama in Atlanta. Other Chevrolet officials present were M. D. Douglas, regional sales manager; L. S. Costley, assistant regional sales manager of the Southeast; E. Sever, sales manager of the Birmingham zone; Ray D. Wilson, sales manager of the Jacksonville zone, and E. E. Riley, sales manager in charge of the Atlanta retail district.

Anderson Named Head of Automotive Association

CHICAGO, Dec. 6—John W. Anderson was elected president of the Automotive Manufacturers Association at the annual meeting just held here. Other officers are J. F. Shuford, first vice-president, and C. D. Pettingell, second vice-president.

Directors elected for two-year terms are J. A. Anderson, F. S. Armstrong, B. J. Koral, Elmer Rich, C. C. Secrist and J. C. Shaw. Directors elected for one term to fill vacancies are G. F. Disher and P. C. Thompson.

E. C. Guthard, president of Lincoln Products Co., addressed the meeting on "Merchandising a Competitive Automotive Product in Foreign Markets."

British Truck Maker Shows Gain

LONDON, Nov. 27 *(by mail)*—Dennis Brothers, Guildford, Surrey, truck manufacturer, reports a profit of 48 per cent on the past year's working. The profits were £293,070, against £202,-533 in the previous year. The dividend paid out is the same as last year—25 per cent—the balance being utilized to write off good will and transfer £70,000 to reserve.

Plan Law to Cover License Reciprocity

CHICAGO, Dec. 4—Secretaries of state of six states participated in a meeting at the La Salle Hotel this week at which they agreed to recommend to their respective legislatures the passage of a uniform law on motor vehicle license reciprocity. Reciprocity, under this law, would apply to all motor vehicles but those commercially operated on regular schedules.

The meeting, which resulted in formation of a body to be called the Mid-Western Conference of Motor Vehicle Administrators, was the result of the truck license practice in Kentucky under which a full year's license is required of trucks from other states crossing Kentucky's borders. Kentucky was unofficially represented at the meeting and an effort will be made to have Kentucky pass the proposed uniform law. States officially in the conference were Illinois, Iowa, Minnesota, Kansas, Ohio and Indiana.

Donovan Dies in Boston After Short Retirement

BOSTON, Dec. 7—Joseph S. Donovan, for many years distributor here for the Studebaker Corp. of America, who retired from active business Jan. 1, last, having accumulated $1,000,000, died here this morning. He had been ill for some time with diabetes but was able to be about until a few weeks ago. He was 46 years old.

Mr. Donovan entered the automotive business in 1902 at the Peerless factory. He came to Boston in 1906 to work at the Peerless branch. He accumulated capital through work in his spare time and later took on the Studebaker line. On reaching the financial pinnacle he set for himself he sold out.

Studebaker Adds Dealers

SOUTH BEND, Dec. 9—Studebaker Corp. of America has added 463 dealers to its sales organization since the announcement of its new models last summer, according to a factory statement this week. Dealer interest is attributed to the popularity of the custom built line and to the new Erskine six set for American introduction at the New York show.

Moon Adds New Models Priced $1195 and $1295

ST. LOUIS, Dec. 8—Moon has added "Royal" four-door sedan and two-door brougham models listing at $1295 and $1195 respectively, to its 6-60 line. Both jobs have a special, high luster finish with attractive striping and carry a wide range of equipment, including thermostat, crankcase ventilator, air cleaner, oil purifier, windshield wiper, radiator cap ornament, rear view mirror and twin-beam headlamps. Wheels are of the new squat, fat-spoke type, 19 in. in diameter, and are fitted with 29 x 5.25 in. tires.

The sedan has silk curtains, silk assist cord and robe rail to match upholstery, and instrument board, cowl rail and interior moldings finished in walnut. The rear of the brougham is fitted with an aluminum trimmed, black japan trunk rack and nickel trimmed metal trunk.

A cabriolet-roadster at $1195 also has been added to the 6-60 line.

Reo Declares Extra

LANSING, Dec. 7—Reo Motor Car Co. has declared an extra dividend of 2 per cent and the regular quarterly of 2 per cent, payable Jan. 3 to stock of record Dec. 15. These are at the same rate of payment as made in the preceding quarter.

Paige Adds 3 Models

DETROIT, Dec. 9—Paige-Detroit Motor Car Co. will introduce a new coupe and a cabriolet roadster on the Jewett chassis, priced at $1165 and $1360, at the New York show.

Financial Notes

Lake Erie Bolt & Nut Co. earnings exceeded $2 a share during the first nine months of 1926 according to N. J. Clark, president. Earnings in all of 1925 were $2.20 a share. The company has no borrowed money and has improved its position by buying the lease to the plant property. Following the purchase the company has cut its interest charges to $36,000 a year.

Federal Motor Truck Co. declared the regular quarterly dividend of 20 cents in cash and 2½ per cent in stock. The cash dividend is payable Jan. 2 to stock of record Dec. 18 and the stock dividend is payable Jan. 5 to stock of record Dec. 18.

Norwalk Tire & Rubber Co. for the year ended Sept. 30, 1926, shows net loss of $296,136 after depreciation, interest and other charges. The previous report covering the nine months ended Sept. 30, 1925, showed net profits of $218,007 after charges and general taxes.

Continental Motors Corp. at the close of the fiscal year Oct. 31 had 11,105 stockholders, compared with 9164 on corresponding date of 1925 and 5969 in 1924. Capital stock comprises 1,780,845 no par shares.

Kelsey Wheel Co. has declared its regular quarterly dividend of $1.50 on common stock, payable Jan. 3 to stock of record Dec. 21.

Reeves and Jordan to Talk

NEW YORK, Dec. 8—Alfred Reeves, general manager of the National Automobile Chamber of Commerce, will address a meeting of 2000 business men at a luncheon in the Public Auditorium, Cleveland, Dec. 14, on "Why the Automobile Industry Continues to Grow." The luncheon is to be held in conjunction with an exhibit of automotive products made in Cleveland conducted by the Cleveland Chamber of Commerce. Cleveland aspects of the automobile industry will be discussed by Edward S. Jordan, president of the Jordan Motor Car Co.

Developments of the Week in Leading Motor Stocks

NEW YORK, Dec. 8—Motor shares again advanced last week and although speculative attention was still mainly focused on a few specialties, the automobile companies began to attract more notice and the rises were accompanied by reports of impending improvement in sales conditions.

As a matter of fact there appeared to be no more real reason that the stocks should go up of late than that they should have declined on the immediately preceding movement. Lowered factory operations are what the industry expected for the late fall and a rebound in the market is naturally looked for after the first of the year. But talk of the effect of the national shows was most often heard in connection with the upward course of quotations last week.

In the news of the week, however, there were one or two explanations of recent movements in particular stocks. Recent strength in Gardner, which has brought the stock to around 9 against a recent low of 5½, is accounted for by current earnings and the reception accorded the new line of small eights. Earnings for the year will be from 50 to 75 cents a share on production of about 4000 cars. In December alone output will be 400 to 500 cars.

Paige held steady around previously established levels, showing that the cut in dividends had been thoroughly discounted, while the story of how body difficulties had temporarily interfered with the company's earnings gave a favorable aspect to the outlook.

Among the leaders in the advances were Chrysler, Hudson, General Motors, Studebaker, Jordan, Nash and Moon, showing that the movement was fairly well distributed over the group. The declines, where any occurred, were only fractional.

The accessory and equipment group did not share to an equal degree in the upward move, but there were gains of nearly 10 points in Kelsey Wheel and over 4 in Moto Meter. Stromberg was off nearly 8 points. Apparently technical considerations ruled in this group.

Steel Buying Holds Encouraging Level

Closing of Some Rolling Mills Due to Repair Plans—Prices Remain Firm

NEW YORK, Dec. 9—Automotive demand for sheets, strip steel, and cold-finished bars is more encouraging. The reason for shut-downs of some of the Mahoning Valley rolling mills is threefold. In the first place, this is the time of the year when repairs on sheet mills and sheet furnaces are most conveniently made. An additional reason is that while specifications from automotive consumers show improvement, shipping orders in many instances allow mills sufficient leeway to enable them to accumulate a backlog that can be more advantageously scheduled for rolling than if the orders had to be rushed through piecemeal.

By following this course now rollers will be in position, if a more strenuous buying movement should develop in the year's last fortnight, to make a prompt start on 1927 shipments with their plants in order.

Pessimists point out that it was during the second half of December, 1925, that sheet demand began to fall off and that it was not until three months later that it reasserted itself. They lose sight of the fact, however, that for two-and-a-half months preceding the decline of last December, demand was very heavy, while this year the downturn in buying came in September, shortly after mills had announced their decision to bring about price advances.

There is much talk of price-shading in the sheet market. There is little doubt that here and there where a sheet roller can add a desirable tonnage to his order book, especially if it fits in nicely with what orders he has on hand, he will go far to secure the business. Under present conditions, the market is naturally soft, but it is too early to pass judgment on whether prevailing sheet quotations will or will not stand the acid test of representative transactions.

Pig Iron—The market rules quiet and unchanged. Automotive foundries are informally sounding the market as to some of their 1927 requirements. Blast furnace interests are not disposed to accelerate demand at the sacrifice of price and there is nothing in the air that would cause consumers to fear sudden advances.

Aluminum—Little change is to be noted in the situation. Importers claim to have booked a very fair amount of business for 1927 shipment. The low levels in the copper market act as a brake on aluminum prices, but the general impression is that the sole domestic producer is nearing the close of one of the most prosperous years, so that there is very little incentive to price changes one way or the other. The market for remelted metal is quiet and easy.

Copper—The general impression is that copper prices are bound to react very soon from the low levels that have been chalked up recently. While prices for automotive brasses are conceded to be very attractive, there is little disposition to anticipate future requirements.

Tin—Most of the business transacted in the local market is for speculative account. Consumers are buying at present prices only what they can not get along without.

Lead—The market rules easy and fractionally lower. Storage battery consumers appear to be well covered.

Chevrolet to Show Increase of 209,637

DETROIT, Dec. 4—In manufacturing 728,697 automobiles this year the Chevrolet Motor Co. is bringing to a close the most successful 12 months in its history. This year's production will be 209,637 greater than last year, or a gain of more than 40 per cent. Daily production averaged 2450 cars and reached its highest monthly record in September with a daily average of 3381. During that month a total of 81,158 cars was manufactured.

Besides the unusual record set up in September, the company also enjoyed phenomenal business during other months, notably in April, May and June, when the respective production figures were 71,157, 74,617 and 77,241. In July, production was curtailed to effect some improvements in models. August production was 76,551.

Chevrolet is now rearranging its manufacturing facilities in anticipation of building 1,000,000 cars in 1927.

Walker Buys Automatic to Extend Electric Line

CHICAGO, Dec. 4—Walker Vehicle Co. has acquired control of the Automatic Transportation Co., Inc., of Buffalo. In connection with the transaction, the Walker company has sold an issue of $1,750,000 of 5½ per cent serial notes, part of the proceeds of which will be devoted to buying the capital stock of the Buffalo company.

Automatic Transportation Co. makes electric trucks and tractors for use in factories, warehouses and railroad terminals. The Walker company makes electric trucks and tractors for street hauling.

Nash Shows 45% Gain

KENOSHA, Dec. 6—Sales of Nash Motors Co. in the first 11 months of 1926 show a 45 per cent gain over the same period in 1925, according to E. H. McCarty, general sales manager. November sales were in excess of November, 1925.

Cleveland Plants Reduce

CLEVELAND, Dec. 6—Automobile plants here reduced their working forces 12.4 per cent during November which is less than the reduction during October, according to the Chamber of Commerce.

Hardwood Inquiries Grow as 1927 Nears

Lumbermen See Record Business Volume in First Quarter of New Year

ATLANTA, Dec. 6—Manufacturers and wholesalers in the Atlanta lumber market state that, while sales of hardwood to automotive and body trades in the East and Middle West have continued to show a slight decline the past two weeks, the volume of inquiries for first quarter delivery in 1927 is improving at a steady pace, and that present indications give promise of a record volume of hardwood sales for that period. A few sizeable orders, in fact, have already been booked for first quarter delivery with some of the larger automobile and body manufacturers, and it is generally believed by lumbermen here that there will be a considerable volume of this business booked during the remainder of the present month, at any rate a larger volume than last year, judging from the tone of the present inquiries.

All of the buying that is being done for immediate delivery is for comparatively small quantities, but there is a fair amount of this business being booked. As yet manufacturers are not anticipating their requirements more than a short time in advance.

The price situation is unchanged. Thicker dimensions of white ash, best grades, which the call is primarily for, and No. 1 and select grade which stands second, holding to the same price levels that have prevailed in this market now for several months.

Star Sells Coast Branch

LOS ANGELES, Dec. 6—The factory branch operated here by the Star Motor Co. of California has been sold to W. S. Dulmage, formerly of Seattle, who is now operating the establishment as a retail sales agency. The sale of the branch is another step in carrying out the policy of the manufacturing company to dispose of its branches to individual dealers.

The Hollywood factory branch was sold several months ago to J. B. Melvin.

Canadian Shipments 26,013

DETROIT, Dec. 4—The automobile industry has made unusual gains in its Canadian business during the 12 months ending Oct. 30, it was revealed here today. Automobile imports gained from 12,998 units to 26,013. Canadian automobile factories also enjoyed an increase in export business, cars exported increasing from 52,900 to 55,600. General business in Canada shows a gain of $223,000,000 for the period compared with the previous 12 months with large gains in the West.

Plan Consolidation of Highway Activity

Educational Board Advances Proposal to Unite All Development Efforts

WASHINGTON, Dec. 6—An increase in the activities of the Highway Educational board was voted here this week at the Board's annual meeting and election of officers. The board is also to be reorganized to the extent that it will include an enlarged personnel.

It is planned that all the various agencies concerned in an educational program dealing with engineering, safety, economics, research and finance of highways be brought together in the one organization whose purpose is the advancement of highway transport affairs. Cooperating already with the board are four Government departments, the Pan American Union, and such industries as the automobile, rubber, accessory and highway materials manufacturers.

The officers and new personnel of the board are: Thomas H. MacDonald, chief of the U. S. Bureau of Public Roads, chairman; Dean F. L. Bishop, School of Engineering, University of Pittsburgh, treasurer; Pyke Johnson, of the National Automobile Chamber of Commerce, secretary, and the following members: J. Walter Drake, assistant secretary of commerce; Wilbur J. Carr, assistant secretary of state; Dr. Leo S. Rowe, director general of the Pan American Union; Dr. John J. Tigert, U. S. commissioner of education; Roy D. Chapin, and H. H. Rice, of the N. A. C. C.; H. S. Firestone, and W. O. Rutherford, representing the rubber industry, and F. I. Kent of the Investment Bankers' Association. The American Association of State Highway Officials will also be represented by a member not yet selected.

Gasoline Supply Reduced

WASHINGTON, Dec. 6—All previous records for the production of gasoline were broken by refiners during October, according to figures just announced by the U. S. Bureau of Mines. During the month the total production was 1,082,004,000 gal. Consumption of gasoline during October was 986,696,000 gal. At the current rate of demand the refiners had on hand Nov. 1, a 40 days' supply, compared with a 50 days' supply on hand Nov. 1, 1925.

Creditors Buy Laurel

ANDERSON, IND., Dec. 6—The property of the Laurel Motors Co. here has been sold for $17,000 by Wade H. Free, receiver, to V. L. Wright, an Indianapolis attorney, who is understood to be attorney for the creditors. No announcement of the future plans for the use of the property was given by the purchaser.

CAREFUL DRIVING NOT LIQUOR SIGN

WASHINGTON, Dec. 7—In the absence of a justified suspicion, prohibition officers have no authority in the absence of a warrant to stop and search an automobile, according to a decision just rendered by the United States Circuit Court of Appeals, and reported to the Department of Justice.

The decision was made on a case where officers in Texas saw an automobile, on the highway, traveling slowly, and apparently heavily loaded. Due to the precaution of the driver he was suspected of having liquor aboard. They arrested him and discovered 51 gal. of whisky.

His conviction and the libel of the automobile were reversed by the circuit court which said: "The fact that an automobile is moving on a public highway and appears to be heavily loaded and is driven carefully does not warrant a reasonable belief that it is being used as a means of committing a criminal offense, because such careful use on a highway is entirely consistent with a legitimate use of it."

Additions to Olds Plant to Increase Output Third

LANSING, Dec. 4—The Olds Motor Works is making plant extensions designed to increase production approximately one-third, according to I. J. Reuter, president. Addition of building space and increased equipment are included in the program. With the erection of a new building to the heat treating plant, the capacity of this division will be doubled. To provide for assembly of the greater output of other departments, chassis assembly line facilities are being doubled. New and additional machinery is also being placed in the axle, motor, sheet metal and other plants to increase production. Body building facilities also are being enlarged.

During the first eight months of 1926, Oldsmobile business increased 70.6 per cent over the same period a year ago.

Studebaker Takes Stock

SOUTH BEND, Dec. 6—Studebaker Corp. of America will reopen its plants for manufacture on Dec. 13 following annual inventory now being taken. It is expected to resume on a schedule of approximately 300 cars daily.

Murray Sale Approved

DETROIT, Dec. 4—Sale of the Murray Body Corp. to J. Horace Harding and Casimir Stralem, representing the reorganization committee, for $5,000,000, has been approved in Federal Court.

Rail Problem Now How to Use Truck

Executives Concede Importance as Carrier—Seek Means to Best Utilization

CHICAGO, Dec. 4—Application of the motor truck in the railroad's scheme of transportation operations formed the central theme of discussion at the two-day Railroad Motor Transport Conference held this week at the Congress Hotel. The conference was attended by railway traffic executives of the United States and Canada. Discussions indicated that the carriers generally are giving increasingly more thought to the problem of utilizing the truck as an adjunct to rail facilities.

The general value of the motor vehicle in freight terminal operations and its uses otherwise seemed commonly admitted, the big issue being how far the truck could be made to fit into a coordinated plan whereby the railroad would profitably assume the responsibility of complete handling from the original shipper to the door of the consignee. Whether cartage companies should be contracted with for terminal handling of collection and delivery, as against such handling by the road itself, was a problem discussed.

There was a predominant sentiment in the conference that the automotive factor is permanently established and that it must be studied and dealt with by the railroads. Present day transportation, said one executive, has two characteristics—"on rail" and "off rail," and he pointed to the latter as embodying the problem which the roads must now work out.

Railroad Freight Gains

WASHINGTON, Dec. 8—Despite the increased competition from interstate and intrastate motor transports, the net ton-miles of freight on the railroads of the country the first nine months of this year increased from 333,403,000,000 to 356,854,000,000 comparing the figures with the first nine months of last year, according to the monthly reports to the Interstate Commerce Commission.

The average mileage per car per day was 29.9 miles, the average speed of trains in freight service being 12 miles per hour.

Chemists to Discuss Fuel

NEW YORK, Dec. 6—The Northeastern Section of the American Chemical Society will meet at the Massachusetts Institute of Technology, Jan. 15, when Dr. W. K. Lewis will speak on "Petroleum Resources and the Influence of New Refining Methods on the Supply of Gasoline," and Dr. A. C. Fieldner will speak on "Motor Fuels From Coal."

Thompson to Locate Warehouse System

CLEVELAND, Dec. 6—As part of its program to establish adequate stocks for distribution in contiguous territory, Thompson Products, Inc., has opened a factory branch and warehouse in Chicago which is the third of seven planned. Branches previously opened are in Detroit and San Francisco. Those to follow will be in New York, Atlanta, Kansas City and Toronto.

The Chicago branch will serve distributors in Indiana, Illinois, Iowa, Minnesota, Michigan, Wisconsin, Nebraska and the Dakotas, the majority of whom will have a 24-hour service by the new arrangement. C. W. Sawyer, formerly of the Thompson sales force, is in charge under the supervision of P. V. Spain, Chicago district manager.

S.A.E. Hears Hoffman

SAN FRANCISCO, Dec. 6—The San Francisco section of the Society of Automotive Engineers discussed air cleaners at its monthly meeting and dinner Nov. 25 at the Engineers' Club here. Professor A. H. Hoffman, of the University of California, was the speaker of the evening, discussing "Experiences We Have Had With Air Cleaners and What to Consider in the Selection of an Air Cleaner." Attendance was virtually the full membership of the chapter. E. C. Wood, chairman of the northern California section, named the attendance and membership committee for the coming year and announced that a speaker of prominence would appear at each meeting.

Prest-O-Lite Adds Plant

NEW YORK, Dec. 6—The Prest-O-Lite Co. of New York, has authorized construction of an assembling plant at Cincinnati which will cost $300,000. It is expected the plant will be in operation by March, 1927.

Coming Feature Issues of Chilton Class Journal Publications

Dec. 20—Commercial Car Journal—Good Roads Issue.

Jan. 1—Automobile Trade Journal—Annual Show Issue.

Jan. 6—Motor Age—Annual Show Issue.

Jan. 20—Commercial Car Journal—New York Show Issue.

Jan. 27—Motor Age—Chicago Show Issue.

Ford Agency Prepares Advertising for Dealers

DETROIT, Dec. 6—Since the discontinuance by Ford Motor Co. of its advertising program in May, the company is reported to have been handicapped in its sales program. To overcome this in so far as newspapers are concerned, the Detroit agency handling Ford advertising has developed a special service for dealers under which they are provided with material for advertising in their local papers at a rate providing for a fixed number of advertisements a month. The aid of newspaper publishers has been enlisted in selling the plan, all the cost of which is borne by the dealer.

A.E.R.A. Selects Cleveland

NEW YORK, Dec. 6—The American Electric Railway Association will hold its 1927 convention and show in Cleveland at the public auditorium, the dates being set for Oct. 3 to 7. In returning to Cleveland the association is influenced by the facilities afforded by the auditorium which it found surpassing those of other cities.

N.A.C.C. Directors Make Show Plans

NEW YORK, Dec. 6—Alvan Macaulay, president of Packard Motor Car Co., was appointed chairman of the committee in charge of the national automobile show banquet at the meeting of the board of directors of the National Automobile Chamber of Commerce under whose auspices the show and banquet are held.

Reports submitted to the board on the World Motor Transport Congress indicated that between 500 and 600 delegates from foreign countries will attend.

Production reports and estimates indicated that about as many automobiles and trucks are being manufactured now as were last year at this time, which was to be expected in view of the heavy output in the first 10 months of the year. Dealer stocks are reported generally heavy, the board was told, due in part to the increased number of units in the various lines.

Two Oil Dealers Fined

NEW YORK, Dec. 6—Two service station proprietors in Queens county have been found guilty and fined $50 each for violating the penal code in misrepresenting the brand of oil sold to motorists, Edmund A. Whittier, secretary-treasurer of the American Fair Trade Association, announced today.

As the result of investigation of 21 stations in Queens county, samples of oil submitted to a chemist revealed that seven of the 21 were spurious, the association reports.

Paterson Plant Sold

FLINT, Dec. 4—The factory buildings occupied by the W. A. Paterson Co., manufacturer of the Paterson automobile, which retired from business several years ago, have been sold to a Flint real estate firm for $250,000.

Calendar of Coming Events

SHOWS

Brussels .....Dec. 4-15
Buenos Aires .....Dec. 7-20
Ninth Argentine Automobile Show, Palermo Park.
Cairo .....Feb. 15-March 15
First International Motor Show.
Chicago .....Jan. 10-15
Coliseum, American Road Builders' Association.
Chicago .....Jan. 29-Feb. 5
National, Coliseum, National Automobile Chamber of Commerce, including special Shop Equipment Exhibit.
Chicago .....Jan. 29-Feb. 5
Annual Salon, Hotel Drake.
Colombo .....Jan. 6-16
All-Ceylon Motor and General Engineering Exhibition.
Geneva .....March 4-13
Palais des Expositions.
Los Angeles .....Feb. 12-19
Annual Salon, Hotel Biltmore.
New York .....Jan. 8-15
National, Grand Central Palace, National Automobile Chamber of Commerce, including special Shop Equipment Exhibit.
Paris .....Dec. 3-19
International Aeronautic Exposition, Grand Palais.

CONVENTIONS

American Road Builders' Association, Congress Hotel, Chicago ....Jan. 10-15
Automotive Electric Association, Electrical Service Meeting, Congress Hotel, Chicago .....Feb. 1-2
Motor & Accessory Manufacturers Association, Dinner, New York, Jan. 12
National Association of Automobile Show and Association Managers, New York .....Jan. 12
National Association of Automobile Show and Association Managers, Drake Hotel, Chicago .....Feb. 3
National Automobile Dealers Association, Hotel Commodore, New York .....Jan. 10-11
National Automobile Dealers Association, La Salle Hotel, Chicago..Feb. 1-3
National Safety Council, Mid-West Safety Congress, Hotel LaSalle, Chicago .....Feb. 21
Rubber Association of America, meeting and dinner, Hotel Commodore, New York .....Jan. 10

N. A. C. C.

Chicago, Feb. 1—Service Meeting.
New York, Jan. 10-11—Third World Motor Transport Congress.
New York, Jan. 11—Service Meeting.
New York, Jan. 11—Banquet.

S. A. E.

Detroit Section, Dec. 18.
Detroit, Jan. 25-28—Annual Meeting.
Detroit, Jan. 28—Carnival.
Metropolitan Section, Dec. 16—Maintenance, Operation and Service, by Col. John Stilwell and T. L. Preble.
New York, Jan. 13—Banquet.
Pennsylvania Section, Dec. 14—What is Going on in Philadelphia?

RACES

Altoona, Pa. .....June 11
Atlantic City .....April 30
Charlotte, N. C. .....May 9
Fresno, Cal. .....April 21
Indianapolis .....May 30
Los Angeles .....Feb. 22
Los Angeles .....April 10
Salem, N. H. .....June 25